

=> fil reg  
FILE 'REGISTRY' ENTERED AT 16:05:21 ON 12 JAN 2006

=> d his

FILE 'HCAPLUS' ENTERED AT 14:46:49 ON 12 JAN 2006  
L1 1 S US20040197667/PN  
SEL RN

FILE 'REGISTRY' ENTERED AT 14:47:12 ON 12 JAN 2006  
L2 66 S E1-E66  
L3 STR  
L4 12 S L3  
L5 STR L3  
L6 181 S L5 FUL  
SAV WEI192/A L6  
L7 1 S 67-68-5/RN  
L8 1 S 68-12-2/RN  
L9 1 S 75-05-8/RN  
L10 1 S 79-16-3/RN  
L11 1 S 96-48-0/RN  
L12 1 S 96-49-1/RN  
L13 1 S 123-39-7/RN  
L14 1 S 616-42-2/RN  
L15 1 S 623-96-1/RN  
L16 1 S 872-50-4/RN

FILE 'HCAPLUS' ENTERED AT 15:23:17 ON 12 JAN 2006  
L17 253 S L6  
L18 105215 S L7-L16  
L19 108 S L17 AND L18  
L20 2 S L19 AND (THIOPHEN? OR SULFONYL?)

FILE 'REGISTRY' ENTERED AT 15:25:14 ON 12 JAN 2006  
L21 1 S 756901-23-2/RN  
L22 1 S 756901-22-1/RN  
L23 1 S 90076-65-6/RN  
L24 1 S 28452-93-9/RN  
L25 1 S 5535-48-8/RN  
L26 1 S 3680-02-2/RN  
L27 1 S 1889-59-4/RN  
L28 1 S 620-32-6/RN  
L29 1 S 127-63-9/RN  
L30 1 S 126-33-0/RN  
L31 1 S 77-77-0/RN  
L32 1 S 67-71-0/RN

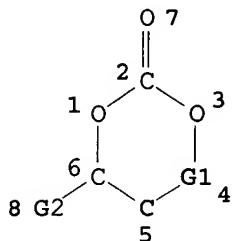
FILE 'HCAPLUS' ENTERED AT 15:29:40 ON 12 JAN 2006  
L33 10071 S L21-L32  
L34 23 S L19 AND L33

FILE 'REGISTRY' ENTERED AT 15:33:13 ON 12 JAN 2006  
L35 1 S 131651-65-5/RN  
L36 1 S 33454-82-9/RN  
L37 1 S 1120-71-4/RN

FILE 'HCAPLUS' ENTERED AT 16:00:23 ON 12 JAN 2006  
L38 4327 S L35-L37  
L39 14 S L19 AND L38

L40 27 S L34 OR L39  
 L41 25 S L40 AND ELECTROLYT?  
 L42 1 S L41 AND L1

=> d que 141  
 L5 STR



REP G1=(0-3) C  
 VAR G2=X/CN/NO2  
 NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RSPEC I  
 NUMBER OF NODES IS 8

STEREO ATTRIBUTES: NONE

L6 181 SEA FILE=REGISTRY SSS FUL L5  
 L7 1 SEA FILE=REGISTRY ABB=ON PLU=ON 67-68-5/RN  
 L8 1 SEA FILE=REGISTRY ABB=ON PLU=ON 68-12-2/RN  
 L9 1 SEA FILE=REGISTRY ABB=ON PLU=ON 75-05-8/RN  
 L10 1 SEA FILE=REGISTRY ABB=ON PLU=ON 79-16-3/RN  
 L11 1 SEA FILE=REGISTRY ABB=ON PLU=ON 96-48-0/RN  
 L12 1 SEA FILE=REGISTRY ABB=ON PLU=ON 96-49-1/RN  
 L13 1 SEA FILE=REGISTRY ABB=ON PLU=ON 123-39-7/RN  
 L14 1 SEA FILE=REGISTRY ABB=ON PLU=ON 616-42-2/RN  
 L15 1 SEA FILE=REGISTRY ABB=ON PLU=ON 623-96-1/RN  
 L16 1 SEA FILE=REGISTRY ABB=ON PLU=ON 872-50-4/RN  
 L17 253 SEA FILE=HCAPLUS ABB=ON PLU=ON L6  
 L18 105215 SEA FILE=HCAPLUS ABB=ON PLU=ON (L7 OR L8 OR L9 OR  
       L10 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16)  
 L19 108 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 AND L18  
 L21 1 SEA FILE=REGISTRY ABB=ON PLU=ON 756901-23-2/RN  
 L22 1 SEA FILE=REGISTRY ABB=ON PLU=ON 756901-22-1/RN  
 L23 1 SEA FILE=REGISTRY ABB=ON PLU=ON 90076-65-6/RN  
 L24 1 SEA FILE=REGISTRY ABB=ON PLU=ON 28452-93-9/RN  
 L25 1 SEA FILE=REGISTRY ABB=ON PLU=ON 5535-48-8/RN  
 L26 1 SEA FILE=REGISTRY ABB=ON PLU=ON 3680-02-2/RN  
 L27 1 SEA FILE=REGISTRY ABB=ON PLU=ON 1889-59-4/RN  
 L28 1 SEA FILE=REGISTRY ABB=ON PLU=ON 620-32-6/RN  
 L29 1 SEA FILE=REGISTRY ABB=ON PLU=ON 127-63-9/RN  
 L30 1 SEA FILE=REGISTRY ABB=ON PLU=ON 126-33-0/RN  
 L31 1 SEA FILE=REGISTRY ABB=ON PLU=ON 77-77-0/RN  
 L32 1 SEA FILE=REGISTRY ABB=ON PLU=ON 67-71-0/RN  
 L33 10071 SEA FILE=HCAPLUS ABB=ON PLU=ON (L21 OR L22 OR L23 OR  
       L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31  
       OR L32)

L34 23 SEA FILE=HCAPLUS ABB=ON PLU=ON L19 AND L33  
 L35 1 SEA FILE=REGISTRY ABB=ON PLU=ON 131651-65-5/RN  
 L36 1 SEA FILE=REGISTRY ABB=ON PLU=ON 33454-82-9/RN  
 L37 1 SEA FILE=REGISTRY ABB=ON PLU=ON 1120-71-4/RN  
 L38 4327 SEA FILE=HCAPLUS ABB=ON PLU=ON (L35 OR L36 OR L37)  
 L39 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L19 AND L38  
 L40 27 SEA FILE=HCAPLUS ABB=ON PLU=ON L34 OR L39  
 L41 25 SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND ELECTROLYT?

=> fil hcap  
 FILE 'HCAPLUS' ENTERED AT 16:05:41 ON 12 JAN 2006

=> d 141 1-25 ibib abs hitstr hitind

L41 ANSWER 1 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1106707 HCAPLUS  
 DOCUMENT NUMBER: 143:370054  
 TITLE: Overcharge protection for electrochemical  
 cells  
 INVENTOR(S): Amine, Khalil; Liu, Jun; Jambunathan,  
 Krishnakumar; Peterson, Brian Keith; Dantsin,  
 Gennady  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 16 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005227143	A1	20051013	US 2005-97810	2005 0401
EP 1587158	A2	20051019	EP 2005-7806	2005 0408
JP 2005302727	A2	20051027	JP 2005-114017	2005 0411
PRIORITY APPLN. INFO.:			US 2004-561193P	P 2004 0409
			US 2005-97810	A 2005 0401

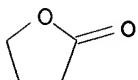
AB The invention relates to an improvement in a cell which is normally susceptible to damage from overcharging comprised of a neg. electrode, a pos. electrode, and an electrolyte comprised of an overcharge protection salt carried in a carrier or

solvent. Representative overcharge protection salts are embraced by the formula: MaQ, where M is an electrochem. stable cation selected from the group consisting of alkali metal, alkaline earth metal, tetraalkylammonium, or imidazolium groups, and Q is a borate or heteroborate cluster and a is the integer 1 or 2.

IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 126-33-0, Sulfolane 623-96-1, Dipropyl carbonate 3967-54-2, Chloroethylene carbonate 33454-82-9, Lithium triflate 90076-65-6 (overcharge protection for electrochem. cells)

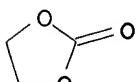
RN 96-48-0 HCAPLUS

CN 2 (3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



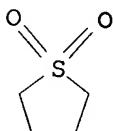
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



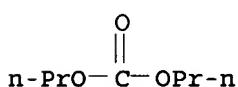
RN 126-33-0 HCAPLUS

CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



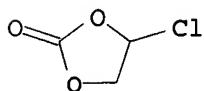
RN 623-96-1 HCAPLUS

CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS

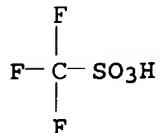
CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



RN 33454-82-9 HCAPLUS

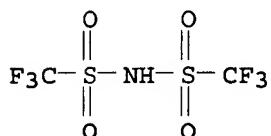
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)

(CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
     , lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-36  
 INCL 429188000; 429199000; 429200000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
     Section cross-reference(s): 72  
 IT Battery electrolytes  
     Redox potential  
         (overcharge protection for electrochem. cells)  
 IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0,  
     γ-Butyrolactone 96-49-1, Ethylene carbonate  
     105-37-3, Ethyl propionate 105-54-4, Ethyl butyrate 105-58-8,  
     Diethyl carbonate 108-29-2, γ-Valerolactone 108-32-7,  
     Propylene carbonate 109-99-9, Thf, uses 110-71-4,  
     1,2-Dimethoxyethane 112-49-2, Triglyme 112-60-7, Tetraethylene  
     glycol 115-10-6, Dimethylether 126-33-0, Sulfolane  
     141-78-6, Ethyl acetate, uses 497-26-7, 2-Methyl-1,3-dioxolane  
     539-82-2, Ethyl valerate 554-12-1, Methyl propionate 590-01-2,  
     Butyl propionate 616-38-6, Dimethyl carbonate 623-42-7, Methyl  
     butyrate 623-53-0, Ethyl Methyl carbonate 623-96-1,  
     Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0,  
     1,3-Dioxolane 872-36-6, Vinylene carbonate 1072-47-5,  
     4-Methyl-1,3-dioxolane 1513-87-7, Bis(2,2,2-  
         trifluoroethyl)carbonate 2797-28-6, Lithium  
         tetrakis(pentafluorophenyl)borate 3967-54-2,  
         Chloroethylene carbonate 4427-96-7, Vinyl ethylene carbonate  
         7550-35-8, Lithium bromide 7791-03-9, Lithium perchlorate  
         14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium  
         tetraphenylborate 18424-17-4, Lithium hexafluoroantimonate  
         19836-78-3, 3-Methyl-2-oxazolidinone 21324-40-3, Lithium  
         hexafluorophosphate 25322-68-3, Polyethylene glycol  
         29935-35-1, Lithium hexafluoroarsenate 33454-82-9,

Lithium triflate 35363-40-7, Ethyl propyl carbonate 37830-90-3, Dimethylvinylene carbonate 56525-42-9, Methyl propyl carbonate 90076-65-6 132843-44-8 154496-21-6 156783-95-8 866482-08-8 866482-09-9 866482-10-2 866482-11-3 866482-12-4 866482-13-5 866482-14-6 (overcharge protection for electrochem. cells)

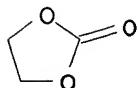
L41 ANSWER 2 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:810848 HCAPLUS  
 DOCUMENT NUMBER: 143:232653  
 TITLE: Electrolyte solution for battery  
 INVENTOR(S): Yamaguchi, Akira; Nakajima, Kaoru; Fujishige, Yusuke; Fukushima, Yuzuru; Nagamine, Masayuki  
 PATENT ASSIGNEE(S): Sony Corporation, Japan  
 SOURCE: Eur. Pat. Appl., 30 pp.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1564833	A2	20050817	EP 2005-2718	2005 0209
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
JP 2005228565	A2	20050825	JP 2004-35294	2004 0212
US 2005196670	A1	20050908	US 2005-49432	2005 0201
PRIORITY APPLN. INFO.:			JP 2004-35294	A 2004 0212

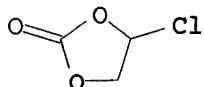
AB Provided are an electrolyte solution and a battery which are capable of improving cycle characteristics. An anode includes a simple substance, an alloy or a compound of a metal element or a metalloid element capable of forming an alloy with lithium as an anode active material. A separator is impregnated with an electrolyte solution formed through dissolving an electrolyte salt in a solvent. The electrolyte salt includes a first electrolyte salt including LiB(C<sub>2</sub>O<sub>4</sub>)<sub>2</sub> and a second electrolyte salt including at least one kind selected from the group consisting of LiPF<sub>6</sub>, LiBF<sub>4</sub>, LiN(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>, LiN(C<sub>2</sub>F<sub>5</sub>SO<sub>2</sub>)<sub>2</sub>, LiClO<sub>4</sub>, LiAsF<sub>6</sub> and LiC(CF<sub>3</sub>SO<sub>2</sub>)<sub>3</sub>. In the solvent, 4-fluoroethylene carbonate is included. A coating is formed on the anode by the first electrolyte salt, and high ionic conductivity can be obtained by the second electrolyte salt. Further an oxidation-decomposition reaction of the electrolyte solution which occurs in a cathode can be prevented by 4-fluoroethylene carbonate.

IT 96-49-1, Ethylene carbonate 3967-54-2  
90076-65-6 114435-02-8  
(electrolyte solution for battery)

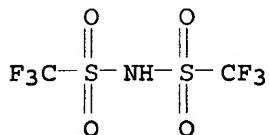
RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)

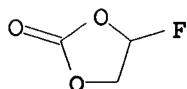


RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 114435-02-8 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



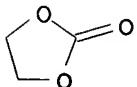
IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery electrolyte  
 IT Battery electrolytes  
     (electrolyte solution for battery)  
 IT Secondary batteries  
     (lithium; electrolyte solution for battery)  
 IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate  
 3967-54-2 7440-21-3, Silicon, uses 7440-31-5, Tin,  
 uses 7791-03-9, Lithium perchlorate 12190-79-3, Cobalt lithium  
 oxide (CoLiO<sub>2</sub>) 12645-62-4 12668-36-9 14283-07-9, Lithium  
 tetrafluoroborate 14797-73-0, Perchlorate 14874-70-5,  
 Tetrafluoroborate 16919-18-9, Hexafluorophosphate 16973-45-8,  
 Hexafluoroarsenate 21324-40-3, Lithium hexafluorophosphate  
 29935-35-1, Lithium hexafluoroarsenate 60225-00-5  
 90076-65-6 114435-02-8 125579-65-9  
 132404-42-3 132843-44-8 207685-67-4 244761-29-3, Lithium

bis(oxalato)borate 848629-92-5  
(electrolyte solution for battery)

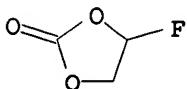
L41 ANSWER 3 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2005:692424 HCAPLUS  
DOCUMENT NUMBER: 143:176231  
TITLE: Secondary lithium batteries showing high  
discharge capacity and excellent  
charge-discharge cycling performance  
INVENTOR(S): Adachi, Momoe  
PATENT ASSIGNEE(S): Sony Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005209377	A2	20050804	JP 2004-11831	2004 0120
PRIORITY APPLN. INFO.:			JP 2004-11831	2004 0120

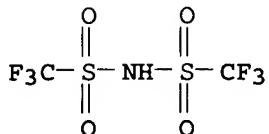
OTHER SOURCE(S): MARPAT 143:176231  
AB In the batteries, at least a part of anode active mass is alloyed with anode current collectors, and the batteries contain anions expressed by  $[PFa[CHbFc(CF3)d]e]^-$  (a = 1, 2, 3, 4, 5; b = 0, 1; c = 0, 1, 2, 3; d = 0, 1, 2, 3; e = 1, 2, 3, 4; a + e = 6; b + c + d = 3; b + c ≠ 0). Alternatively, the anode active mass layers are formed on anode current collectors by vapor deposition, electroplating, electroless plating, or by sintering. The anode active mass contain ≥1 selected from Si, Si alloys, Si compds., Sn, Sn alloys, and Sn compds. The anodes inhibit powdering and the electrolytes show high stability.  
IT 96-49-1, Ethylene carbonate 114435-02-8,  
4-Fluoro-1,3-dioxolan-2-one  
(electrolyte solvents; secondary Li batteries containing  
fluoroalkylphosphate electrolytes)  
RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 114435-02-8 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IT 90076-65-6, Lithium bis(trifluoromethylsulfonyl)amide  
 (electrolytes; secondary Li batteries containing  
 fluoroalkylphosphate electrolytes)  
 RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
 , lithium salt (9CI) (CA INDEX NAME)



● Li

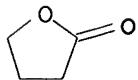
IC ICM H01M004-02  
 ICS H01M004-04; H01M004-38; H01M004-64; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium battery electrolyte hydrofluoroalkylphosphate;  
 silicon anode lithium battery; tin anode lithium battery  
 IT Coating process  
 (electroless, formation of anode active mass on current  
 collectors; secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT Electrodeposition  
 Sintering  
 Vapor deposition process  
 (formation of anode active mass on current collectors;  
 secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT Secondary batteries  
 (lithium; secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT Battery anodes  
 Battery electrolytes  
 (secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT Silicon alloy, base  
 Tin alloy, base  
 (anodes; secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT 7440-50-8, Copper, uses  
 (anode current collectors; secondary Li batteries containing  
 fluoroalkylphosphate electrolytes)  
 IT 7440-21-3, Silicon, uses 7440-31-5, Tin, uses  
 (anodes; secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 114435-02-8, 4-Fluoro-1,3-dioxolan-2-one  
 (electrolyte solvents; secondary Li batteries containing  
 fluoroalkylphosphate electrolytes)  
 IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium  
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate  
 29935-35-1, Lithium hexafluoroarsenate 90076-65-6,  
 Lithium bis(trifluoromethylsulfonyl)amide 132404-42-3, Lithium

tris(trifluoromethylsulfonyl)methanide 377739-48-5 403699-21-8  
 403699-22-9, Lithium trifluorotris(perfluoroethyl)phosphate  
 (electrolytes; secondary Li batteries containing  
 fluoroalkylphosphate electrolytes)

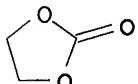
L41 ANSWER 4 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:402673 HCAPLUS  
 DOCUMENT NUMBER: 142:466432  
 TITLE: Secondary battery with non-aqueous  
 electrolyte  
 INVENTOR(S): Ohzuku, Tsutomu; Yoshizawa, Hiroshi; Nakura,  
 Kensuke  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd.,  
 Japan  
 SOURCE: Eur. Pat. Appl., 32 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1530248	A2	20050511	EP 2004-256668	2004 1028
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
JP 2005142047	A2	20050602	JP 2003-377954	2003 1107
US 2005147889	A1	20050707	US 2004-979764	2004 1103
PRIORITY APPLN. INFO.:			JP 2003-377954	A 2003 1107

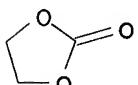
AB As an alternative for Pb-acid batteries, an inexpensive 2 V nonaq. electrolyte-based secondary battery is presented. The battery has a good cycle lifetime at high rates due to prevention of volume changes during charging and discharging. This secondary battery has a cathode-active material with a layered structure, represented by  $\text{Li}_{1+\alpha}[\text{Me}]O_2$ , where  $0 \leq \alpha < 0.2$ , and Me is a transition metal including Ni and at least one selected from Mn, Fe, Co, Ti and Cu, and including elemental Ni and elemental Co in substantially the same ratio. The battery also has an anode-active material,  $\text{Li}_4\text{Ti}_5\text{O}_12$  ( $\text{Li}[\text{Li}_{1/3}\text{Ti}_{5/3}]O_4$ ).  
 IT 96-48-0 96-49-1, Ethylene carbonate  
 96-49-1D, Ethylene carbonate, fluorinated 126-33-0  
 , Sulpholane 114435-02-8, Fluoroethylene carbonate  
 (electrolyte containing; in secondary battery with  
 non-aqueous electrolyte)  
 RN 96-48-0 HCAPLUS  
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



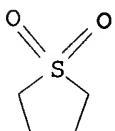
RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



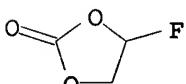
RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 126-33-0 HCAPLUS  
 CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 114435-02-8 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IC ICM H01M004-48  
 ICS H01M004-50; H01M004-52  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST secondary battery nonaq **electrolyte** anode cathode  
 IT Halides  
     (in non-aqueous **electrolyte** for secondary battery)  
 IT Polyesters, uses  
     (in secondary battery with non-aqueous **electrolyte**)  
 IT Sulfonic acids, uses  
     (salts; in non-aqueous **electrolyte** for secondary battery)  
 IT Battery anodes  
 Battery cathodes  
 Battery **electrolytes**  
 Secondary batteries  
     (second battery with non-aqueous **electrolyte**)  
 IT Polyamide fibers, uses

Vinal fibers  
 (separator; in secondary battery with non-aqueous  
 electrolyte)

IT Aluminum alloy, base  
 (current collector; in secondary battery with non-aqueous  
 electrolyte)

IT 12031-95-7, Lithium titanate (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>)  
 (anode containing; in secondary battery with non-aqueous  
 electrolyte)

IT 11113-67-0, Iron lithium oxide 39302-37-9, Lithium titanium  
 oxide 39457-42-6, Lithium manganese oxide 52627-24-4, Cobalt  
 lithium oxide 104708-77-2, Copper lithium oxide  
 (cathode containing; in secondary battery with non-aqueous  
 electrolyte)

IT 7439-95-4, Magnesium, uses 7440-24-6, Strontium, uses  
 7440-64-4, Ytterbium, uses 7440-65-5, Yttrium, uses 7440-70-2,  
 Calcium, uses  
 (cathode containing; in secondary battery with non-aqueous  
 electrolyte)

IT 131344-56-4P, Cobalt lithium nickel oxide 182442-95-1P, Cobalt  
 lithium manganese nickel oxide  
 (cathode containing; in secondary battery with non-aqueous  
 electrolyte)

IT 7429-90-5, Aluminum, uses  
 (current collector, cathode containing; in secondary battery with  
 non-aqueous electrolyte)

IT 7440-50-8, Copper, uses  
 (current collector; in secondary battery with non-aqueous  
 electrolyte)

IT 78-40-0, Triethyl phosphate 96-48-0 96-49-1,  
 Ethylene carbonate 96-49-1D, Ethylene carbonate,  
 fluorinated 105-58-8, Diethyl carbonate 108-29-2 108-32-7,  
 Propylene carbonate 111-32-0 126-33-0, Sulpholane  
 512-56-1, Trimethyl phosphate 623-53-0, Ethyl methyl carbonate  
 35466-86-5 114435-02-8, Fluoroethylene carbonate  
 174899-82-2 268536-05-6  
 (electrolyte containing; in secondary battery with  
 non-aqueous electrolyte)

IT 14283-07-9 21324-40-3, Lithium hexafluorophosphate (LiPF<sub>6</sub>)  
 (electrolyte; in secondary battery with non-aqueous  
 electrolyte)

IT 14798-03-9, Ammonium, uses 16749-13-6, Phosphonium 16969-45-2,  
 Pyridinium 17009-90-4, Imidazolium 25215-10-5, Guanidinium  
 55526-39-1, Pyrrolidinium  
 (electrolyte; secondary battery with non-aqueous  
 electrolyte)

IT 334-48-5, Decanoic acid 11129-12-7, Borate 14265-44-2,  
 Phosphate, uses 14808-79-8, Sulfate, uses 17655-31-1, Amide  
 39349-74-1, Antimonate 58207-38-8  
 (in non-aqueous electrolyte for secondary battery)

IT 147098-72-4, Cobalt nickel hydroxide (Co<sub>0.5</sub>Ni<sub>0.5</sub>(OH)<sub>2</sub>)  
 602297-52-9, Cobalt manganese nickel hydroxide  
 (Co<sub>0.33</sub>Mn<sub>0.33</sub>Ni<sub>0.33</sub>(OH)<sub>2</sub>)  
 (in preparation of cathode material for secondary battery with  
 non-aqueous electrolyte)

IT 9003-07-0, Polypropylene  
 (in secondary battery with non-aqueous electrolyte)

IT 9002-88-4, Polyethylene 25038-59-9, uses 26062-94-2,  
 Polybutylene terephthalate  
 (separator; in secondary battery with non-aqueous

electrolyte)

L41 ANSWER 5 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:155490 HCAPLUS  
 DOCUMENT NUMBER: 142:264348  
 TITLE: Electrolyte for rechargeable lithium  
 battery  
 INVENTOR(S): Lee, Yong-Beom; Song, Eui-Hwan; Kim,  
 Kwang-Sup; Earmme, Tae-Shik; Kim, You-Mee  
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea  
 SOURCE: Eur. Pat. Appl., 32 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1508934	A1	20050223	EP 2004-90320	2004 0819
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
JP 2005072003	A2	20050317	JP 2004-241017	2004 0820
US 2005084765	A1	20050421	US 2004-924248	2004 0820
PRIORITY APPLN. INFO.:				
		KR 2003-57716	A	2003 0820
		KR 2004-5874	A	2004 0129

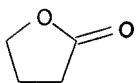
OTHER SOURCE(S): MARPAT 142:264348

AB Disclosed is an electrolyte for a rechargeable lithium battery, including a mixture of organic solvents including a cyclic solvent and a nitrile-based solvent represented by the formula R-C.tpbond.N (R is from C1-10 aliphatic hydrocarbons, C1-10 halogenated aliphatic hydrocarbons, C6-10 aromatic hydrocarbons, and C6-10 halogenated aromatic hydrocarbons) and a lithium salt.

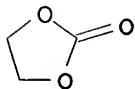
IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 623-96-1, Dipropyl carbonate 33454-82-9, Lithium triflate 90076-65-6 (electrolyte for rechargeable lithium battery)

RN 96-48-0 HCAPLUS

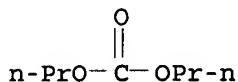
CN 2 (3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



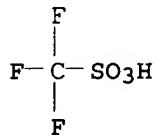
RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 623-96-1 HCAPLUS  
 CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

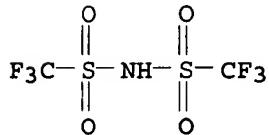


RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



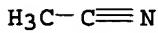
● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)

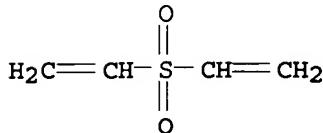


● Li

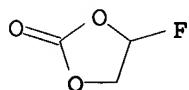
IT 75-05-8, Acetonitrile, uses 77-77-0, DiVinyl sulfone 114435-02-8, Fluoroethylene carbonate (electrolyte for rechargeable lithium battery)  
 RN 75-05-8 HCAPLUS  
 CN Acetonitrile (8CI, 9CI) (CA INDEX NAME)



RN 77-77-0 HCAPLUS  
 CN Ethene, 1,1'-sulfonylbis- (9CI) (CA INDEX NAME)



RN 114435-02-8 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38  
 ST electrolyte rechargeable lithium battery  
 IT Nitriles, uses  
     (aliphatic, C1-10; electrolyte for rechargeable lithium  
     battery)  
 IT Nitriles, uses  
     (aromatic, C6-10; electrolyte for rechargeable lithium  
     battery)  
 IT Battery electrolytes  
     (electrolyte for rechargeable lithium battery)  
 IT Lactones  
     (electrolyte for rechargeable lithium battery)  
 IT Secondary batteries  
     (lithium; electrolyte for rechargeable lithium  
     battery)  
 IT Peroxides, uses  
     (organic; electrolyte for rechargeable lithium battery)  
 IT 94-36-0, Dibenzoyl peroxide, processes 105-74-8, Dilauroyl  
 peroxide 107-71-1, tert-Butylperoxy acetate 109-13-7,  
 tert-Butylperoxyisobutyrate 110-22-5, Diacetyl peroxide  
 614-45-9, tert-Butylperoxy benzoate 686-31-7, tert-Amylperoxy  
 2-ethylhexanoate 927-07-1, tert-Butyl peroxy pivalate  
 2372-21-6, tert-Butyl peroxy isopropyl carbonate 3006-82-4,  
 tert-Butyl peroxy-2-ethyl hexanoate 3851-87-4,  
 Bis(3,5,5-trimethyl)hexanoyl peroxide 4419-11-8,  
 2,2'-Azobis(2,4-dimethylvaleronitrile) 13122-18-4,  
 tert-Butylperoxy 3,5,5-trimethylhexanoate 15518-51-1, Diethylene  
 glycol bis(tert-butylperoxycarbonate) 15520-11-3,  
 Di(4-tert-butylcyclohexyl)peroxydicarbonate 25551-14-8  
 26748-38-9, tert-Butyl peroxy neoheptanoate 26748-41-4,  
 tert-Butyl peroxy neodecanoate 29240-17-3, tert-Amyl  
 peroxy pivalate 34443-12-4, tert-Butyl peroxy 2-ethylhexyl  
 carbonate 36536-42-2, 1,6-Hexanediol bis(tert-butyl  
 peroxydicarbonate) 51240-95-0, 1,1,3,3-Tetramethylbutyl peroxy  
 neodecanoate 51938-28-4, tert-Hexylperoxy pivalate 52238-68-3,  
 Bis(3-methoxybutyl) peroxydicarbonate 68860-54-8 96989-15-0  
 845717-44-4

(electrolyte for rechargeable lithium battery)

IT 79-20-9, Methyl acetate 96-48-0,  $\gamma$ -Butyrolactone  
 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 106-70-7, Methyl hexanoate 107-12-0, Propionitrile 107-31-3,  
 Methyl formate 108-29-2,  $\gamma$ -Valerolactone 108-32-7,  
 Propylene carbonate 109-74-0, Butyronitrile 110-59-8,  
 Valeronitrile 124-12-9, Caprylonitrile 140-29-4,  
 Phenylacetonitrile 141-78-6, Ethyl acetate, uses 326-62-5,  
 2-FluoroPhenylacetonitrile 394-47-8, 2-Fluorobenzonitrile  
 459-22-3, 4-FluoroPhenylacetonitrile 502-44-3,  
 $\epsilon$ -Caprolactone 542-28-9,  $\delta$ -Valerolactone  
 542-52-9, Dibutyl carbonate 616-38-6, Dimethyl carbonate  
 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl  
 carbonate 629-08-3, Heptanenitrile 630-18-2, tert-Butyl  
 cyanide 695-06-7,  $\gamma$ -Caprolactone 766-05-2,  
 Cyclohexanecarbonitrile 1194-02-1, 4-Fluorobenzonitrile  
 4254-02-8, Cyclopentanecarbonitrile 4437-85-8, Butylene  
 carbonate 7439-93-2D, Lithium, salt 7791-03-9, Lithium  
 perchlorate 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium  
 tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate  
 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium  
 hexafluoroarsenate 33454-82-9, Lithium triflate  
 57381-51-8, 4-Chloro-2-fluoro-benzonitrile 60702-69-4,  
 2-Chloro-4-fluoro-benzonitrile 90076-65-6 90240-74-7  
 127813-79-0 132843-44-8 179802-95-0, Cobalt lithium manganese  
 nickel oxide (Co<sub>0.1</sub>LiMn<sub>0.1</sub>Ni<sub>0.8</sub>O<sub>2</sub>) 845717-45-5

(electrolyte for rechargeable lithium battery)

IT 75-05-8, Acetonitrile, uses 77-77-0, DiVinyl  
 sulfone 105-64-6, Di-isopropylperoxydicarbonate 628-73-9,  
 Capronitrile 872-36-6, Vinylene carbonate 3741-38-6, Ethylene  
 sulfite 16111-62-9, Bis(2-ethylhexyl) peroxydicarbonate  
 22537-94-6 71331-99-2, Bis(4-tert-butylcyclohexyl)peroxycarbonat  
 e 114435-02-8, Fluoroethylene carbonate

(electrolyte for rechargeable lithium battery)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 6 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:999582 HCAPLUS

DOCUMENT NUMBER: 141:426305

TITLE: Nonaqueous electrolyte for a lithium  
 secondary battery

INVENTOR(S): Noh, Hyung-Gon

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004229128	A1	20041118	US 2004-834668	2004 0428
JP 2004342585	A2	20041202	JP 2004-17904	

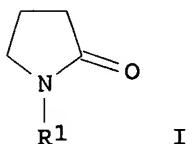
2004  
0127

CN 1551401 A 20041201 CN 2004-10045142

2004  
0428

PRIORITY APPLN. INFO.: KR 2003-30380

A

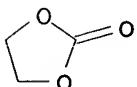
2003  
0513OTHER SOURCE(S) : MARPAT 141:426305  
GI

AB Disclosed is an **electrolyte** of a lithium secondary battery comprising a lithium salt, an organic solvent, and at least one additive compound selected from the group consisting of compds. represented by the formula (I) and derivs. thereof: where R1 is selected from the group consisting of hydrogen radicals, alkyls aryls, cycloalkyls, alkenyls, alkynyls, ester radicals, and aliphatic carbonate radicals. The **electrolyte** improves both swelling inhibition properties at high temperature and capacity characteristics of a lithium secondary battery.

IT 96-49-1, Ethylene carbonate 623-96-1, Dipropyl carbonate 33454-82-9, Lithium triflate 90076-65-6 131651-65-5, Lithium nonafluorobutanesulfonate (nonaq. **electrolyte** for lithium secondary battery)

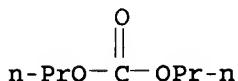
RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



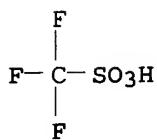
RN 623-96-1 HCPLUS

CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



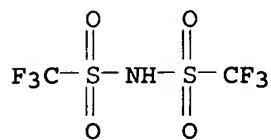
RN 33454-82-9 HCPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



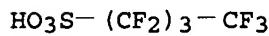
● Li

RN 90076-65-6 HCPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

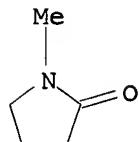
RN 131651-65-5 HCPLUS  
 CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (9CI) (CA INDEX NAME)



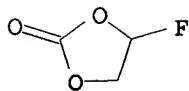
● Li

IT 872-50-4, 1-Methyl-2-pyrrolidone, uses 114435-02-8  
 , Fluoroethylene carbonate  
 (nonaq. electrolyte for lithium secondary battery)

RN 872-50-4 HCPLUS  
 CN 2-Pyrrolidinone, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 114435-02-8 HCPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 ICS H01M004-52; H01M004-50; H01M004-58  
 INCL 429328000; 429330000; 429231100; 429223000; 429224000; 429231950  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38  
 ST electrolyte nonaq lithium secondary battery  
 IT Swelling, physical  
     (inhibition; nonaq. electrolyte for lithium secondary  
     battery)  
 IT Secondary batteries  
     (lithium; nonaq. electrolyte for lithium secondary  
     battery)  
 IT Battery electrolytes  
     (nonaq. electrolyte for lithium secondary battery)  
 IT Aromatic hydrocarbons, uses  
     Esters, uses  
     Ethers, uses  
     Ketones, uses  
     (nonaq. electrolyte for lithium secondary battery)  
 IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate  
     105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate  
     108-88-3, Toluene, uses 462-06-6, Fluorobenzene 463-79-6D,  
     Carbonic acid, ester 616-38-6, Dimethyl carbonate 623-53-0,  
     Methylethyl carbonate 623-96-1, Dipropyl carbonate  
     1330-20-7, Xylene, uses 4437-85-8, Butylene carbonate  
     7791-03-9, Lithium perchlorate 12355-58-7 14024-11-4, Lithium  
     tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate  
     18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium  
     hexafluorophosphate 27359-10-0, Trifluorotoluene 29935-35-1,  
     Lithium hexafluoroarsenate 33454-82-9, Lithium triflate  
     35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl propyl  
     carbonate 90076-65-6 131651-65-5, Lithium  
     nonafluorobutanesulfonate  
     (nonaq. electrolyte for lithium secondary battery)  
 IT 88-12-0, 1Vinyl-2-pyrrolidone, uses 872-36-6, Vinylene carbonate  
     872-36-6D, Vinylene carbonate, derivative 872-50-4,  
     1-Methyl-2-pyrrolidone, uses 2687-91-4, 1-Ethyl-2-pyrrolidone  
     4641-57-0, 1-Phenyl-2-pyrrolidone 7439-93-2, Lithium, uses  
     12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) 114435-02-8,  
     Fluoroethylene carbonate 162684-16-4, Lithium manganese nickel  
     oxide  
     (nonaq. electrolyte for lithium secondary battery)

L41 ANSWER 7 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:803862 HCAPLUS  
 DOCUMENT NUMBER: 141:298765  
 TITLE: Method for manufacture of cathode for  
       nonaqueous electrolyte secondary  
       battery  
 INVENTOR(S): Itaya, Masaharu; Miyake, Masahide; Fujimoto,  
       Masahisa  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: U.S. Pat. Appl. Publ., 67 pp.  
 CODEN: USXXCO

DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

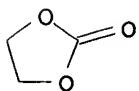
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004191629	A1	20040930	US 2004-807148	2004 0324
JP 2004296189	A2	20041021	JP 2003-85138	2003 0326
JP 2005190978	A2	20050714	JP 2004-73577	2004 0315
CN 1534822	A	20041006	CN 2004-10032318	2004 0326
PRIORITY APPLN. INFO.:			JP 2003-85138	A 2003 0326
			JP 2003-89077	A 2003 0327
			JP 2003-405837	A 2003 1204
			JP 2004-73577	A 2004 0315

AB A non-aqueous **electrolyte** secondary battery comprises a pos. electrode including elemental sulfur, a neg. electrode including silicon that stores lithium, and a non-aqueous **electrolyte** including a room temperature molten salt having a m.p. of not higher than 60°. The non-aqueous **electrolyte** may further include at least one type of solvent selected from cyclic ether, chain ether, and fluorinated carbonate. The non-aqueous **electrolyte** may include a reduction product of elemental sulfur. The pos. electrode has a pos. electrode active material made of a mixture of elemental sulfur, a conductive agent, and a binder. The electrode having a pos. electrode active material is processed under reduced-pressure while immersed in the non-aqueous **electrolyte**. A pressure during the reduced-pressure process is preferably not higher than 28000 Pa (-55 cm Hg with respect to atmospheric pressure).

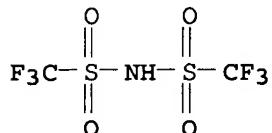
IT 96-49-1, Ethylene carbonate 90076-65-6  
548478-05-3  
(method for manufacture of cathode for nonaq. **electrolyte** secondary battery)

RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

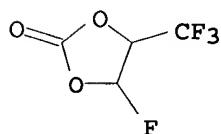


RN 90076-65-6 HCPLUS  
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 548478-05-3 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-fluoro-5-(trifluoromethyl)- (9CI) (CA INDEX  
NAME)



IC ICM H01M004-58  
IC S H01M010-40  
INCL 429231950; 429218100; 429220000; 429329000; 429337000; 429330000;  
429338000  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST cathode manuf nonaq **electrolyte** secondary battery  
IT Ethers, uses  
    (cyclic; method for manufacture of cathode for nonaq.  
        **electrolyte** secondary battery)  
IT Battery cathodes  
Secondary batteries  
    (method for manufacture of cathode for nonaq. **electrolyte**  
        secondary battery)  
IT Carbonaceous materials (technological products)  
Ethers, uses  
Quaternary ammonium compounds, uses  
    (method for manufacture of cathode for nonaq. **electrolyte**  
        secondary battery)  
IT 7439-93-2, Lithium, uses  
    (method for manufacture of cathode for nonaq. **electrolyte**  
        secondary battery)  
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 463-79-6D,  
Carbonic acid, ester, fluorinated 646-06-0, 1,3-Dioxolane  
7440-21-3, Silicon, uses 7704-34-9, Sulfur, uses 21324-40-3,  
Lithium hexafluorophosphate 90076-65-6 167951-80-6

210230-43-6, Trimethylhexylammonium bis(trifluoromethylsulfonyl)imide 268536-05-6, Trimethylpropylammonium bis(trifluoromethylsulfonyl)imide 497220-96-9, Triethylmethylammonium 2,2,2-trifluoro-N-(trifluoromethylsulfonyl)acetamide 548478-05-3  
(method for manufacture of cathode for nonaq. electrolyte secondary battery)

L41 ANSWER 8 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2004:796490 HCAPLUS  
DOCUMENT NUMBER: 141:263480  
TITLE: A nonaqueous electrolyte for a lithium secondary battery  
INVENTOR(S): Noh, Hyeong-Gon; Jung, Cheol-Soo; Song, Eui-Hwan  
PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea  
SOURCE: Eur. Pat. Appl., 25 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1463143	A2	20040929	EP 2003-90265	2003 0821
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2005108440	A2	20050421	JP 2003-183257	2003 0626
CN 1532986	A	20040929	CN 2003-155677	2003 0902
US 2004197667	A1	20041007	US 2003-653192	2003 0903
A KR 2003-18226 2003 0324				

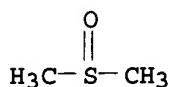
PRIORITY APPLN. INFO.:

OTHER SOURCE(S): MARPAT 141:263480

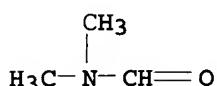
AB An electrolyte of a lithium secondary battery includes lithium salts, an organic solvent with a high b.p., and a carbonate-based additive compound having substituents selected from the group consisting of a halogen, a CN, and a NO<sub>2</sub>. The electrolyte improves discharge, low temperature, and cycle life characteristics of a lithium secondary battery.

IT 67-68-5, Dmso, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 79-16-3, N-Methylacetamide 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 123-39-7, n-Methylformamide 126-33-0, Sulfolane 616-42-2, Dimethyl sulfite 623-96-1, Dipropyl carbonate 872-50-4, N-Methylpyrrolidone, uses 33454-82-9, Lithium triflate 90076-65-6 131651-65-5

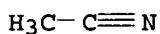
(nonaq. electrolyte for lithium secondary battery)  
 RN 67-68-5 HCAPLUS  
 CN Methane, sulfinylbis- (9CI) (CA INDEX NAME)



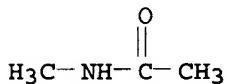
RN 68-12-2 HCAPLUS  
 CN Formamide, N,N-dimethyl- (8CI, 9CI) (CA INDEX NAME)



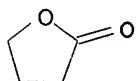
RN 75-05-8 HCAPLUS  
 CN Acetonitrile (8CI, 9CI) (CA INDEX NAME)



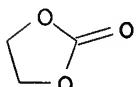
RN 79-16-3 HCAPLUS  
 CN Acetamide, N-methyl- (8CI, 9CI) (CA INDEX NAME)



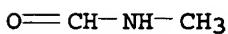
RN 96-48-0 HCAPLUS  
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



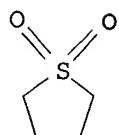
RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



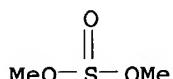
RN 123-39-7 HCAPLUS  
 CN Formamide, N-methyl- (8CI, 9CI) (CA INDEX NAME)



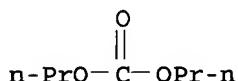
RN 126-33-0 HCAPLUS  
 CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



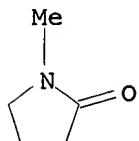
RN 616-42-2 HCAPLUS  
 CN Sulfurous acid, dimethyl ester (8CI, 9CI) (CA INDEX NAME)



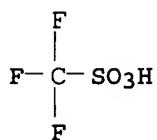
RN 623-96-1 HCAPLUS  
 CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-50-4 HCAPLUS  
 CN 2-Pyrrolidinone, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

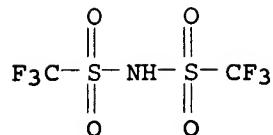


RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



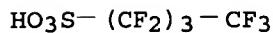
● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



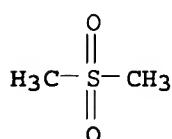
● Li

RN 131651-65-5 HCPLUS  
 CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt  
 (9CI) (CA INDEX NAME)

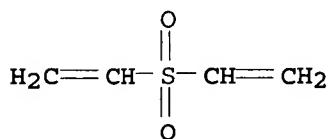


● Li

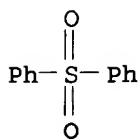
IT 67-71-0, Methyl sulfone 77-77-0, Vinyl sulfone  
 127-63-9, Phenyl sulfone 620-32-6, Benzyl  
 sulfone 1120-71-4, Propane sulfone 1889-59-4,  
 Ethyl vinyl sulfone 3680-02-2, Methyl vinyl sulfone  
 5535-48-8, Phenyl vinyl sulfone 28452-93-9,  
 Butadiene sulfone 114435-02-8, Fluoroethylene carbonate  
 756901-22-1 756901-23-2  
 (nonaq. electrolyte for lithium secondary battery)  
 RN 67-71-0 HCPLUS  
 CN Methane, sulfonylbis- (9CI) (CA INDEX NAME)



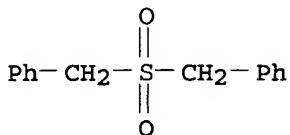
RN 77-77-0 HCPLUS  
 CN Ethene, 1,1'-sulfonylbis- (9CI) (CA INDEX NAME)



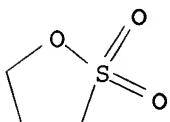
RN 127-63-9 HCPLUS  
 CN Benzene, 1,1'-sulfonylbis- (9CI) (CA INDEX NAME)



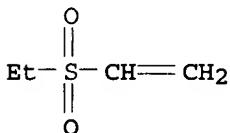
RN 620-32-6 HCAPLUS  
 CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (9CI) (CA INDEX NAME)



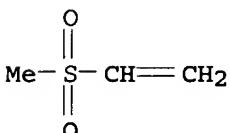
RN 1120-71-4 HCAPLUS  
 CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



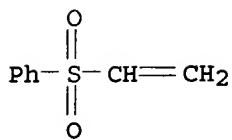
RN 1889-59-4 HCAPLUS  
 CN Ethene, (ethylsulfonyl)- (9CI) (CA INDEX NAME)



RN 3680-02-2 HCAPLUS  
 CN Ethene, (methylsulfonyl)- (9CI) (CA INDEX NAME)



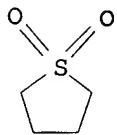
RN 5535-48-8 HCAPLUS  
 CN Benzene, (ethenylsulfonyl)- (9CI) (CA INDEX NAME)



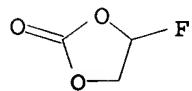
RN 28452-93-9 HCAPLUS  
 CN Thiophene, dihydro-, 1,1-dioxide (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

CM 1

CRN 126-33-0  
 CMF C4 H8 O2 S



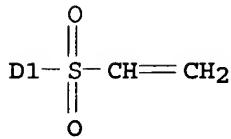
RN 114435-02-8 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



RN 756901-22-1 HCAPLUS  
 CN Benzene, chloro(ethenylsulfonyl)- (9CI) (CA INDEX NAME)



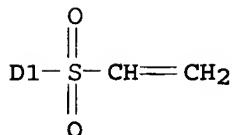
D1-C1



RN 756901-23-2 HCAPLUS  
 CN Benzene, (ethenylsulfonyl)fluoro- (9CI) (CA INDEX NAME)



D1-F



IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq electrolyte lithium secondary battery  
 IT Secondary batteries  
     (lithium; nonaq. electrolyte for lithium secondary  
     battery)  
 IT Battery electrolytes  
     (nonaq. electrolyte for lithium secondary battery)  
 IT Anhydrides  
     Aromatic hydrocarbons, uses  
     (nonaq. electrolyte for lithium secondary battery)  
 IT Fluoropolymers, uses  
     (nonaq. electrolyte for lithium secondary battery)  
 IT Styrene-butadiene rubber, uses  
     (nonaq. electrolyte for lithium secondary battery)  
 IT 67-68-5, Dmso, uses 68-12-2, Dmf, uses  
     71-43-2, Benzene, uses 75-05-8, Acetonitrile, uses  
     79-16-3, N-Methylacetamide 96-48-0,  
     γ-Butyrolactone 96-49-1, Ethylene carbonate  
     105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate  
     108-88-3, Toluene, uses 123-39-7, n-Methylformamide  
     126-33-0, Sulfolane 462-06-6, Fluorobenzene 616-38-6,  
     Dimethyl carbonate 616-42-2, Dimethyl sulfite  
     623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl  
     carbonate 872-50-4, N-Methylpyrrolidone, uses  
     1330-20-7, Xylene, uses 4437-85-8, Butylene carbonate  
     7447-41-8, Lithium chloride, uses 7782-42-5, Graphite, uses  
     7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide  
     12003-67-7 14024-11-4, Lithium tetrachloroaluminate  
     14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium  
     hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate  
     25496-08-6, Fluorotoluene 27359-10-0, TriFluorotoluene  
     29935-35-1, Lithium hexafluoroarsenate 33454-82-9,  
     Lithium triflate 35363-40-7, Ethyl propyl carbonate  
     56525-42-9, Methyl propyl carbonate 90076-65-6  
     131651-65-5 162684-16-4, Lithium manganese nickel oxide  
     (nonaq. electrolyte for lithium secondary battery)  
 IT 67-71-0, Methyl sulfone 77-77-0, Vinyl sulfone  
     80-05-7, uses 104-92-7, 4-Bromoanisole 127-63-9,  
     Phenyl sulfone 452-10-8, 2,4-Difluoroanisole 456-49-5,  
     3-Fluoroanisole 459-60-9, 4-Fluoroanisole 463-79-6D, Carbonic  
     acid, cyclic ester 620-32-6, Benzyl sulfone 623-12-1,

4-Chloroanisole 1073-05-8, 1,3-Propanediol cyclic sulfate  
 1120-71-4, Propane sultone 1888-91-1,  
 n-Acetylcaprolactam 1889-59-4, Ethyl vinyl sulfone  
 2398-37-0, 3-Bromoanisole 2845-89-8, 3-Chloroanisole  
 3680-02-2, Methyl vinyl sulfone 5535-48-8,  
 Phenyl vinyl sulfone 24937-79-9, Pvdf 28452-93-9,  
 Butadiene sulfone 28802-49-5, Dimethylfuran 93343-10-3,  
 3,5-Difluoroanisole 114435-02-8, Fluoroethylene  
 carbonate 202925-08-4, 3-Chloro-5-fluoroanisole  
 756901-22-1 756901-23-2  
 (nonaq. electrolyte for lithium secondary battery)  
 IT 9003-55-8  
 (styrene-butadiene rubber; nonaq. electrolyte for  
 lithium secondary battery)

L41 ANSWER 9 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:570455 HCAPLUS  
 DOCUMENT NUMBER: 141:91879  
 TITLE: Method of preparation of electrolyte  
 for nonaqueous battery  
 INVENTOR(S): Itaya, Masaharu; Miyake, Masahide; Fujimoto,  
 Masahisa; Koga, Hideyuki; Donoue, Kazunori  
 PATENT ASSIGNEE(S): Japan  
 SOURCE: U.S. Pat. Appl. Publ., 7 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

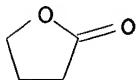
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004137324	A1	20040715	US 2003-743746	2003 1224
JP 2004213991	A2	20040729	JP 2002-381184	2002 1227
JP 2004265677	A2	20040924	JP 2003-53549	2003 0228
PRIORITY APPLN. INFO.:			JP 2002-381184	A 2002 1227
			JP 2003-53549	A 2003 0228

AB An electrolyte for a nonaq. battery according to the present invention consists essentially of magnesium bistrifluoromethanesulfonimide. An electrolytic solution for a nonaq. battery according to the present invention includes the magnesium bistrifluoromethanesulfonimide, and an organic solvent such as a cyclic carbonate, a chain carbonate, a cyclic ether and a chain ether or an ordinary temperature molten salt having a m.p. of 60° or less in which the magnesium bistrifluoromethanesulfonimide is dissolved.  
 IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene

carbonate 126-33-0, Sulfolane 114435-02-8,  
 FluoroEthylene carbonate  
 (method of preparation of electrolyte for nonaq. battery)

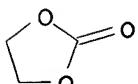
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



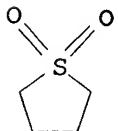
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



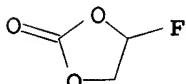
RN 126-33-0 HCAPLUS

CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 114435-02-8 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40

INCL 429188000; 429330000; 429338000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST electrolyte prep nonaq magnesium ion battery

IT Esters, uses

Ethers, uses

(chain; method of preparation of electrolyte for nonaq. battery)

IT Ethers, uses

(cyclic; method of preparation of electrolyte for nonaq. battery)

IT Hydrocarbons, uses

(fluoro; method of preparation of electrolyte for nonaq. battery)

IT Secondary batteries

(magnesium ion; method of preparation of electrolyte for nonaq. battery)

IT Battery electrolytes

(method of preparation of electrolyte for nonaq. battery)

IT Crown ethers  
 Lactones  
 Transition metal sulfides  
 (method of preparation of electrolyte for nonaq. battery)  
 IT Imides  
 (method of preparation of electrolyte for nonaq. battery)  
 IT Sulfonic acids, uses  
 (salts; method of preparation of electrolyte for nonaq. battery)  
 IT Imides  
 Sulfonic acids, uses  
 (sulfonimides, alkyl; method of preparation of electrolyte for nonaq. battery)  
 IT Magnesium alloy, base  
 (method of preparation of electrolyte for nonaq. battery)  
 IT 79-20-9, Methyl acetate 96-48-0,  $\gamma$ -Butyrolactone  
 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 107-31-3, Methyl formate 108-29-2 108-32-7, Propylene  
 carbonate 109-99-9, Thf, uses 110-71-4 126-33-0,  
 Sulfolane 463-79-6D, Carbonic acid, ester, chain 463-79-6D,  
 Carbonic acid, ester, cyclic 554-12-1, Methyl propionate  
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate  
 1309-48-4, Magnesium oxide, uses 1333-38-6, Angelica lactone  
 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses  
 22251-34-9, Ethoxymethoxymethane 51311-17-2, Carbon fluoride  
 60871-83-2, Magnesium triflate 73506-93-1, Diethoxyethane  
 114435-02-8, FluoroEthylene carbonate 133395-16-1  
 268536-05-6, Trimethylpropylammonium-bis-  
 (trifluoromethylsulfonyl)imide  
 (method of preparation of electrolyte for nonaq. battery)  
 IT 546-93-0, Magnesium carbonate 1309-42-8, Magnesium hydroxide  
 (method of preparation of electrolyte for nonaq. battery)

L41 ANSWER 10 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:442665 HCAPLUS

DOCUMENT NUMBER: 141:15941

TITLE: Electrochemically stable onium salts and  
 electrolytes containing such for  
 electrochemical capacitors

INVENTOR(S): Xu, Kang; Ding, Shengping; Jow, T. Richard

PATENT ASSIGNEE(S): The United States of America as Represented by  
 the Secretary of the Army, USA

SOURCE: U.S., 13 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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<u>US 6743947</u>	B1	20040601	US 1999-309393	1999 0510
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US 2004222401	A1	20041111	US 2004-855646	2004 0528
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PRIORITY APPLN. INFO.:			US 1999-309393	A3
				1999

0510

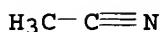
OTHER SOURCE(S): MARPAT 141:15941

AB Based on the discovery that the m.p. and solubility of onium salts are affected by the asymmetry of the substitution on cation, and that the branched substituents effectively shield onium cations from electrochem. reduction, new onium salts were synthesized and high performance **electrolytes** based on these salts for electrochem. capacitor are provided. The composition of the new **electrolyte** comprises an onium salt or mixture of such onium salts dissolved in aprotic, nonaq. solvents or mixture of such solvents. The **electrolyte** is able to perform at high rate of charge/discharge, at low ambient temps., and within wide operating voltage, due to the high solubility, low melting temperature, and the improved reduction stability of the new onium cations, resp.

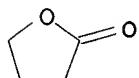
IT 75-05-8, Acetonitrile, uses 96-48-0,  
 $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
 126-33-0, Sulfolane 114435-02-8, Fluoroethylene  
 carbonate 114435-06-2 171730-81-7  
 183301-46-4 183301-52-2  
 (electrochem. stable onium salts and **electrolytes**  
 containing such for electrochem. capacitors with)

RN 75-05-8 HCAPLUS

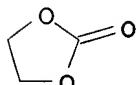
CN Acetonitrile (8CI, 9CI) (CA INDEX NAME)



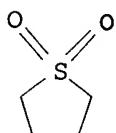
RN 96-48-0 HCAPLUS  
 CN 2 (3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



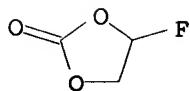
RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



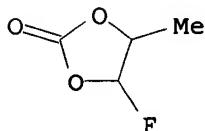
RN 126-33-0 HCAPLUS  
 CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



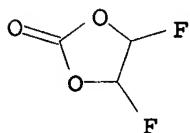
RN 114435-02-8 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



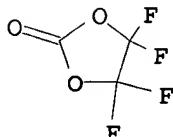
RN 114435-06-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro-5-methyl- (9CI) (CA INDEX NAME)



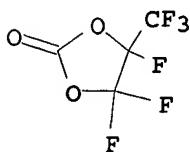
RN 171730-81-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4,5-difluoro- (9CI) (CA INDEX NAME)



RN 183301-46-4 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4,4,5,5-tetrafluoro- (9CI) (CA INDEX NAME)

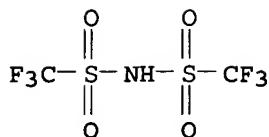


RN 183301-52-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4,4,5-trifluoro-5-(trifluoromethyl)- (9CI)  
 (CA INDEX NAME)



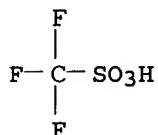
IT 90076-65-6, Lithium bis(trifluoromethane sulfonyl)imide  
 (in preparation of ethylmethyldi(isopropyl)ammonium  
 bis(trifluoromethanesulfonyl)imide)

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
 , lithium salt (9CI) (CA INDEX NAME)



● Li

IT 33454-82-9P, Lithium triflate  
 (in preparation of ethylmethyldi(isopropyl)ammonium triflate)  
 RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA  
 INDEX NAME)



● Li

IC ICM C07D213-20  
 ICS C07C311-48; C07C211-63; C07C381-00; C07F009-02  
 INCL 564281000; 564282000; 564289000; 564082000; 546348000; 361327000;  
 568008000; 568074000  
 CC 76-10 (Electric Phenomena)  
 Section cross-reference(s): 22  
 ST onium salt prepn **electrolytic** capacitor  
 IT **Electrolytic** capacitors  
**Electrolytic** solutions  
 (electrochem. stable onium salts and **electrolytes**  
 containing such for electrochem. capacitors)  
 IT Conducting polymers  
 (electrochem. stable onium salts and **electrolytes**  
 containing such for electrochem. capacitors with)  
 IT Aldehydes, uses  
 Carbides  
 Carbon black, uses  
 Nitrides  
 Phosphates, uses  
 Phosphites  
 (electrochem. stable onium salts and **electrolytes**  
 containing such for electrochem. capacitors with)  
 IT 7440-44-0, Activated carbon, uses  
 (activated; electrochem. stable onium salts and  
**electrolytes** containing such for electrochem. capacitors  
 with)  
 IT 338729-28-5P  
 (electrochem. stable onium salts and **electrolytes**  
 containing such for electrochem. capacitors)  
 IT 75-05-8, Acetonitrile, uses 96-48-0,  
 $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate

108-32-7, Propylene carbonate 111-69-3, Adiponitrile  
126-33-0, Sulfolane 623-53-0, Ethyl methyl carbonate  
4437-85-8, Butylene carbonate 51729-83-0, Methyl isopropyl  
carbonate 114435-02-8, Fluoroethylene carbonate  
114435-06-2 171730-81-7 183301-46-4  
183301-52-2

(electrochem. stable onium salts and **electrolytes** containing such for electrochem. capacitors with)

IT 90076-65-6, Lithium bis(trifluoromethane sulfonyl)imide  
(in preparation of ethylmethyldi(isopropyl)ammonium  
bis(trifluoromethanesulfonyl)imide)

IT 33454-82-9P, Lithium triflate

(in preparation of ethylmethyldi(isopropyl)ammonium triflate)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 11 OF 25 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:118572 HCPLUS

DOCUMENT NUMBER: 140:149163

**TITLE:** Secondary batteries with nonaqueous electrolytes

INVENTOR(S) : Saito, Midori; Komaru, Atsuo; Satori, Kotaro;  
Inagaki, Naoko; Tanizaki, Hiroaki

PATENT ASSIGNEE(S) : Sony Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho

CODEN: JKXXAF

DOCUMENT TYPE: Patent

**LANGUAGE:**

FAMILY ACC. NUM. COUNT: 1

**PATENT INFORMATION:**

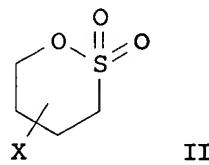
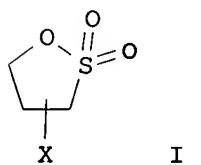
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PATENT NO. **JP 2004047131** KIND **A2** DATE **20040212** APPLICATION NO. **JP 2002-199068** DATE **2002**

PRIORITY APPLN. INFO.: JP 2002-199068

2002  
0708

OTHER SOURCE(S): MARRAT 140:149163

61



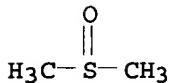
AB The battery comprises (A) a cathode, (B) an anode containing metals, alloys, elements, or their compds. that can form compds. with Li, and (C1) a nonaq. electrolyte containing  $\geq 1$  solvent(s) selected from a 1st solvent group, i.e. ethylene carbonate, fluoroethylene carbonate, propylene carbonate, butylene

carbonate,  $\gamma$ -Bu lactone, and ethylene sulfite and  $\geq 1$  solvent(s) selected from a 2nd solvent group, i.e. di-Me carbonate, Me Et carbonate, di-Et carbonate, Me Pr carbonate, di-Pr carbonate, diisopropyl carbonate, DMSO, and di-Et sulfoxide or (C2) a nonaq. **electrolyte** containing  $\geq 1$  oxathiolane-2,2-dioxides I and II (X = H, F, Cl, Br, Me, CH2F, CHF2, CF3). The batteries have high energy d. and show excellent charge-discharge cycles.

IT 67-68-5, Dimethyl sulfoxide, uses 96-48-0  
 96-49-1, Ethylene carbonate 623-96-1, Dipropyl carbonate 1120-71-4 114435-02-8,  
 Fluoroethylene carbonate  
 (nonaq. **electrolyte**; secondary lithium batteries with  
 nonaq. **electrolytes** with cyclic solvents and  
 noncyclic solvents)

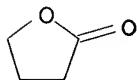
RN 67-68-5 HCAPLUS

CN Methane, sulfinylbis- (9CI) (CA INDEX NAME)



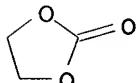
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



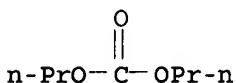
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



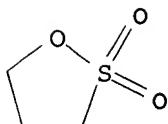
RN 623-96-1 HCAPLUS

CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

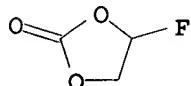


RN 1120-71-4 HCAPLUS

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 114435-02-8 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)

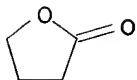


IC ICM H01M010-40  
 ICS H01M004-38  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s) : 27  
 ST secondary lithium battery nonaq **electrolyte**;  
 oxathiolanedioxide nonaq **electrolyte** secondary battery;  
 carbonate **electrolyte** nonaq secondary battery;  
 propionate lithium salt nonaq secondary battery  
 IT Secondary batteries  
 (lithium; secondary lithium batteries with nonaq.  
**electrolytes** with cyclic solvents and noncyclic  
 solvents)  
 IT Battery **electrolytes**  
 (nonaq.; secondary lithium batteries with nonaq.  
**electrolytes** with cyclic solvents and noncyclic  
 solvents)  
 IT 7440-21-3, Silicon, uses 7440-31-5, Tin, uses 259750-80-6  
 (anode; secondary lithium batteries with nonaq.  
**electrolytes** with cyclic solvents and noncyclic  
 solvents)  
 IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 (cathode; secondary lithium batteries with nonaq.  
**electrolytes** with cyclic solvents and noncyclic  
 solvents)  
 IT 67-68-5, Dimethyl sulfoxide, uses 70-29-1, Diethyl  
 sulfoxide 96-48-0 96-49-1, Ethylene carbonate  
 105-37-3, Ethyl propionate 105-58-8, Diethyl carbonate  
 108-32-7, Propylene carbonate 554-12-1, Methyl propionate  
 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate  
 623-96-1, Dipropyl carbonate 1120-71-4  
 1633-83-6 3741-38-6, Ethylene sulfite 4437-85-8, Butylene  
 carbonate 6482-34-4, Diisopropyl carbonate 14283-07-9, Lithium  
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate  
 56525-42-9, Methyl propyl carbonate 114435-02-8,  
 Fluoroethylene carbonate 652143-72-1 652143-73-2 652143-74-3  
 652143-75-4 652143-76-5 652143-77-6 652143-78-7  
 652143-79-8 652143-80-1 652143-81-2 652143-82-3  
 652143-83-4 652143-84-5 652143-85-6  
 (nonaq. **electrolyte**; secondary lithium batteries with  
 nonaq. **electrolytes** with cyclic solvents and  
 noncyclic solvents)

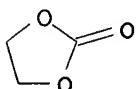
ACCESSION NUMBER: 2003:511642 HCAPLUS  
 DOCUMENT NUMBER: 139:55551  
 TITLE: Secondary nonaqueous electrolyte  
 battery  
 INVENTOR(S): Miyake, Masahide; Fujimoto, Masahisa; Koga,  
 Hideyuki; Tarui, Hisaki; Fujitani, Shin  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 82 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2003054986	A1	20030703	WO 2002-JP13405	2002 1220
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2005019655	A1	20050127	US 2004-495106	2004 0510
PRIORITY APPLN. INFO.:			JP 2001-389259	A 2001 1221
			JP 2002-178142	A 2002 0619
			WO 2002-JP13405	W 2002 1220

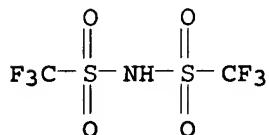
AB The battery uses S as cathode active mass and a nonaq. electrolyte solution m.  $\leq 60^\circ$ . The electrolyte solution may also contain reduction products of S, may use a solvent containing cyclic or linear ether or fluorinated carbonate, and the electrolyte salt is a Li salt, which may be mixed with a quaternary ammonium salt. Preferably, the anode is a Li intercalating anode.  
 IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 90076-65-6 548478-05-3  
 (comps. of low m.p. electrolyte solns. for secondary lithium/sulfur batteries)  
 RN 96-48-0 HCAPLUS  
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

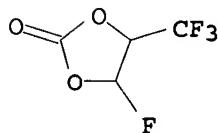


RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 548478-05-3 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro-5-(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H01M004-02  
 ICS H01M004-60; H01M004-62; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium sulfur battery low mp electrolyte soln compn  
 IT Battery electrolytes  
 (compns. of low m.p. electrolyte solns. for secondary  
 lithium/sulfur batteries)  
 IT Secondary batteries  
 (secondary lithium/sulfur batteries with low m.p.  
 electrolyte solns.)  
 IT 1317-40-4, Copper sulfide (CuS) 7704-34-9, Sulfur, uses  
 (cathodes for secondary lithium/sulfur batteries with low m.p.  
 electrolyte solns.)  
 IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene  
 carbonate 105-58-8, Diethyl carbonate 109-99-9, Thf, uses  
 110-71-4, 1,2-Dimethoxyethane 646-06-0, 1,3-Dioxolane

661-36-9, Tetramethylammonium fluoroborate 12136-58-2, Lithium sulfide 21324-40-3, Lithium hexafluorophosphate  
 90076-65-6 210230-43-6 216299-76-2 268536-05-6  
 497220-96-9 548478-05-3  
 (compns. of low m.p. **electrolyte** solns. for secondary lithium/sulfur batteries)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 13 OF 25 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:889107 HCPLUS

DOCUMENT NUMBER: 137:372581

TITLE: Nonaqueous **electrolyte** solution, composition for polymer gel **electrolyte**, polymer gel **electrolyte**, secondary battery, and double layer capacitor

INVENTOR(S): Sato, Takaya; Iida, Hiroki; Maruo, Tatsuya; Banno, Kimiyo

PATENT ASSIGNEE(S): Nisshinbo Industries, Inc., Japan

SOURCE: PCT Int. Appl., 60 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002093679	A1	20021121	WO 2002-JP3937	2002 0419
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
EP 1403957	A1	20040331	EP 2002-720527	2002 0419
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR	CN 1507669	A	20040623	CN 2002-809617
TW 561640	B	20031111	TW 2002-91109366	2002 0419
US 2004146786	A1	20040729	US 2003-476969	2003 1107

PRIORITY APPLN. INFO.: JP 2001-140492 A

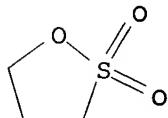
2001  
0510WO 2002-JP3937 W  
2002  
0419

AB The **electrolyte** solution contains a compound having a redox potential  $\geq 1.0$  V vs. Li/Li<sup>+</sup>. The **electrolyte** solution contains an ion conductive salt, an organic solvent, and 0.01-7% of the above described compound selected from maleic anhydride, N-Me maleimide, N-vinylpyrrolidone, tetrahydrofurfuryl (meth)acrylate, vinyl oxazoline, propane sultone, butane sultone, vinylene carbonate, N-vinyl caprolactam, 2-vinyl-1,3-dioxolane, vinylethylene carbonate, ethylene sulfide, their derivs., butadiene sulfone, and fluoroethylene carbonate. The polymer gel **electrolyte** is a gelled composition containing the **electrolyte** solution and a compound, other than those mentioned above, having  $\geq$  reactive double bonds. The battery and capacitor use the above **electrolyte**.

IT 1120-71-4, Propanesultone 28452-93-9,  
Butadienesulfone 114435-02-8  
(**electrolyte** additives with controlled redox potential for secondary lithium batteries and double layer capacitors)

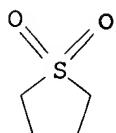
RN 1120-71-4 HCAPLUS

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)

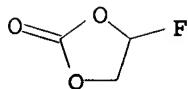


RN 28452-93-9 HCAPLUS  
 CN Thiophene, dihydro-, 1,1-dioxide (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

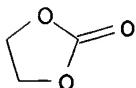
CM 1

CRN 126-33-0  
CMF C4 H8 O2 S

RN 114435-02-8 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IT 96-49-1, Ethylene carbonate  
 (nonaq. electrolyte solns. and polymer gel  
 electrolytes for secondary lithium batteries and double  
 layer capacitors)  
 RN 96-49-1 HCPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 ICS H01G009-038; H01G009-04  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery polymer gel electrolyte additive redox  
 potential; capacitor polymer gel electrolyte additive  
 redox potential  
 IT Capacitors  
 (double layer; nonaq. electrolyte solns. and polymer  
 gel electrolytes for secondary lithium batteries and  
 double layer capacitors)  
 IT Battery electrolytes  
 (nonaq. electrolyte solns. and polymer gel  
 electrolytes for secondary lithium batteries and double  
 layer capacitors)  
 IT Polyurethanes, uses  
 (nonaq. electrolyte solns. and polymer gel  
 electrolytes for secondary lithium batteries and double  
 layer capacitors)  
 IT 88-12-0, uses 108-31-6, Maleic anhydride, uses 420-12-2,  
 Ethylene sulfide 872-36-6, Vinylene carbonate 930-88-1,  
 N-Methyl maleimide 1120-71-4, Propanesultone  
 1633-83-6, Butanesultone 2235-00-9, N-Vinylcaprolactam  
 2455-24-5, Tetrahydrofurfuryl methacrylate 3984-22-3,  
 2-Vinyl-1,3-dioxolane 28452-93-9, Butadienesulfone  
 114435-02-8 128220-92-8  
 (electrolyte additives with controlled redox  
 potential for secondary lithium batteries and double layer  
 capacitors)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 108-32-7, Propylene carbonate 3290-92-4D, Trimethylolpropane  
 trimethacrylate, polymer with Polyethylene glycol  
 dimethacrylate-polyethylene glycol mono methacrylate Me  
 ether-poly(vinyl alc.) cyanoethylate 9002-89-5D, Poly(vinyl  
 alcohol), cyanoethylated 9002-89-5D, Poly(vinyl alcohol),  
 cyanoethylated, polymer with Polyethylene glycol  
 dimethacrylate-polyethylene glycol mono methacrylate Me  
 ether-trimethylolpropane trimethacrylate copolymer 21324-40-3,  
 Lithium hexafluorophosphate 25852-47-5D, Polyethylene glycol  
 dimethacrylate, polymer with polyethylene glycol mono methacrylate  
 Me ether-poly(vinyl alc.) cyanoethylate-trimethylolpropane  
 trimethacrylate copolymer 26915-72-0D, Polyethylene glycol mono

methacrylate methyl ether, polymer with Polyethylene glycol  
dimethacrylate-poly(vinyl alc.) cyanoethylate-trimethylolpropane  
trimethacrylate copolymer 475572-92-0

(nonaq. electrolyte solns. and polymer gel  
electrolytes for secondary lithium batteries and double  
layer capacitors)

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L41 ANSWER 14 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:889106 HCAPLUS

DOCUMENT NUMBER: 137:372580

TITLE: Method for injecting nonaqueous polymer gel  
electrolyte solution

INVENTOR(S): Sato, Takaya; Iida, Hiroki; Maruo, Tatsuya;  
Banno, Kimiyo

PATENT ASSIGNEE(S): Nisshinbo Industries, Inc., Japan

SOURCE: PCT Int. Appl., 42 pp.  
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

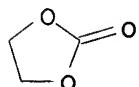
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
WO 2002093678	A1	20021121	WO 2002-JP3936	2002 0419
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1394886	A1	20040303	EP 2002-720526	2002 0419
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
CN 1528029	A	20040908	CN 2002-809619	2002 0419
US 2004139587	A1	20040722	US 2003-476977	2003 1107
PRIORITY APPLN. INFO.:			JP 2001-140569	A 2001 0510
			WO 2002-JP3936	W 2002 0419

AB Electrodes and separators, in batteries and double layer capacitors, are impregnated with a polymer gel **electrolyte**, by injecting an **electrolyte** solution containing a pregel composition having viscosity  $\leq 100$  cP at  $20^\circ$ . The batteries and capacitors are heated to  $\geq 40^\circ$  before the injection. Preferably, the **electrolyte** solution contains an ion conductive salt, an organic **electrolyte** solution, and 0.01-7% of a compound selected from maleic anhydride, N-Me maleimide, N-vinylpyrrolidone, tetrahydrofurfuryl (meth)acrylate, vinyloxazoline, propanesultone, butanesultone, vinylene carbonate, N-vinylcaprolactone, 2-vinyl-1,3-dioxazolane, vinylethylene carbonate, butadienesulfone, ethylene sulfide, their derivs., and fluoroethylene carbonate.

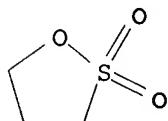
IT 96-49-1, Ethylene carbonate 1120-71-4,  
Propanesultone 183301-46-4  
(compns. and method for injecting nonaq. polymer gel **electrolyte** solns. in batteries and double layer capacitors)

RN 96-49-1 HCAPLUS

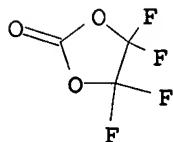
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 1120-71-4 HCAPLUS  
CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 183301-46-4 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4,4,5,5-tetrafluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
ICS H01M002-36; H01G009-038

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrode separator polymer gel **electrolyte**  
injection; capacitor electrode separator polymer gel  
**electrolyte** injection

IT Carbonaceous materials (technological products)  
(compns. and method for injecting nonaq. polymer gel **electrolyte** solns. in batteries and double layer capacitors)

IT Battery electrolytes  
(compns. and method for injecting nonaq. polymer gel electrolyte solns. in secondary lithium batteries)

IT Capacitors  
(double layer; compns. and method for injecting nonaq. polymer gel electrolyte solns. in double layer capacitors)

IT 88-12-0, uses 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-31-6, Maleic anhydride, uses 108-32-7, Propylene carbonate 420-12-2, Ethylene sulfide 872-36-6, Vinylene carbonate 930-88-1, N-Methyl maleimide 1120-71-4, Propanesultone 2455-24-5, Tetrahydrofurfuryl methacrylate 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) 13670-33-2 21324-40-3, Lithium hexafluorophosphate 183301-46-4  
(compns. and method for injecting nonaq. polymer gel electrolyte solns. in batteries and double layer capacitors)

IT 3290-92-4D, Trimethylolpropane trimethacrylate, polymer with cyanoethylated poly(vinyl alc.), poly(ethylene glycol) dimethacrylate, and poly(ethylene glycol) methacrylate Me ether 9002-89-5D, Poly(vinyl alcohol), cyanoethylated, polymer with poly(ethylene glycol) dimethacrylate, poly(ethylene glycol) methacrylate Me ether, and trimethylolpropane trimethacrylate 25852-47-5D, Poly(ethylene glycol) dimethacrylate, polymer with cyanoethylated poly(vinyl alc.), poly(ethylene glycol) methacrylate Me ether, and trimethylolpropane trimethacrylate 26915-72-0D, Poly(ethylene glycol) methacrylate methyl ether, polymer with cyanoethylated poly(vinyl alc.), poly(ethylene glycol) dimethacrylate, and trimethylolpropane trimethacrylate (pregel; compns. and method for injecting nonaq. polymer gel electrolyte solns. in batteries and double layer capacitors)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

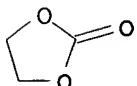
L41 ANSWER 15 OF 25 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2002:818619 HCPLUS  
DOCUMENT NUMBER: 138:156187  
TITLE: Flame retardant electrolytes for Li-ion batteries  
AUTHOR(S): Peramunage, D.; Ziegelbauer, J. M.; Holleck, G. L.  
CORPORATE SOURCE: EIC Laboratories, Inc., Norwood, MA, 02062, USA  
SOURCE: Proceedings - Electrochemical Society (2001), 2000-21(Rechargeable Lithium Batteries), 306-314  
CODEN: PESODO; ISSN: 0161-6374  
PUBLISHER: Electrochemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB Initial results are presented from the development of new flame retardant electrolytes for Li-ion cells. Several groups of flame retardant additives were identified, which in quantities of 5-20% rendered currently used Li-ion cell electrolytes nonflammable in our test. The test procedure was based on the UL 94 flammability standard. It had been modified by incorporating a fiberglass wick soaked with the test electrolyte in place of a solid sample. A very effective flame retardant

additive, tri-Me phosphate (TMP) reduced on graphite below 0.5 V vs. Li but was stable with coke anodes. Efficient operation was demonstrated in a coke/LiMn<sub>2</sub>O<sub>4</sub> cell containing this electrolyte. In the presence of effective solid electrolyte interface formers, TMP may also be compatible with graphite.

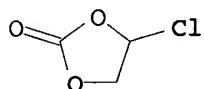
IT 96-49-1, Ethylene carbonate 3967-54-2,  
 Chloroethylene carbonate  
 (electrolyte solvent; development of flame retardant  
 electrolytes for lithium-ion batteries)

RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



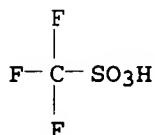
RN 3967-54-2 HCPLUS  
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



IT 33454-82-9, Lithium triflate 90076-65-6, Lithium  
 bis(trifluoromethylsulfonyl)imide  
 (electrolyte; development of flame retardant  
 electrolytes for lithium-ion batteries)

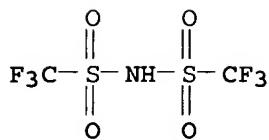
RN 33454-82-9 HCPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA  
 INDEX NAME)



● Li

RN 90076-65-6 HCPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
 , lithium salt (9CI) (CA INDEX NAME)



## ● Li

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST flame retardant **electrolyte** lithium ion battery; methyl  
 phosphate flame retardant **electrolyte** lithium ion  
 battery  
 IT Battery **electrolytes**  
 (development of flame retardant **electrolytes** for  
 lithium-ion batteries)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate  
 3967-54-2, Chloroethylene carbonate  
 (electrolyte solvent; development of flame retardant  
**electrolytes** for lithium-ion batteries)  
 IT 7791-03-9, Lithium perchlorate 21324-40-3, Lithium  
 hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate  
 33454-82-9, Lithium triflate 90076-65-6, Lithium  
 bis(trifluoromethylsulfonyl)imide  
 (electrolyte; development of flame retardant  
**electrolytes** for lithium-ion batteries)  
 IT 107-04-0, 1-Bromo-2-chloroethane 109-70-6, 1-Bromo-3-  
 chloropropane 126-73-8, Tributyl phosphate, uses 512-56-1,  
 Trimethyl phosphate  
 (flame retardant additive; development of flame retardant  
**electrolytes** for lithium-ion batteries)  
 IT 3741-38-6, Ethylene sulfite  
 (solid **electrolyte** interface former; development of  
 flame retardant **electrolytes** for lithium-ion  
 batteries)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 16 OF 25 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2002:66770 HCPLUS  
 DOCUMENT NUMBER: 136:121064  
 TITLE: Nonaqueous **electrolyte** lithium  
 secondary battery  
 INVENTOR(S): Iwamoto, Kazuyu; Oura, Takafumi; Hatazaki,  
 Makino; Yoshizawa, Hiroshi; Sonoda, Kumiko;  
 Nakanishi, Shinji  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd.,  
 Japan  
 SOURCE: Eur. Pat. Appl., 31 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

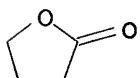
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1174940	A1	20020123	EP 2001-117048	2001 0712
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002033119	A2	20020131	JP 2000-215518	2000 0717
JP 2002033120	A2	20020131	JP 2000-215519	2000 0717
JP 2002033124	A2	20020131	JP 2000-215520	2000 0717
US 2002039677	A1	20020404	US 2001-901130	2001 0710
US 6958198	B2	20051025		
CN 1333580	A	20020130	CN 2001-123135	2001 0717
PRIORITY APPLN. INFO.:				
			JP 2000-215518	A 2000 0717
			JP 2000-215519	A 2000 0717
			JP 2000-215520	A 2000 0717

AB The invention relates to a nonaq. electrochem. apparatus in which the difference ( $\gamma_1 - \gamma_{se}$ ) between the surface tension  $\gamma_1$  of nonaq. electrolyte and the surface free energy  $\gamma_{se}$  of electrode is not more than 10 dynes/cm. The nonaq. electrolyte contains a F-containing surface active agent.

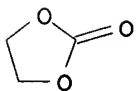
IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 90076-65-6  
(nonaq. electrolyte lithium secondary battery)

RN 96-48-0 HCAPLUS

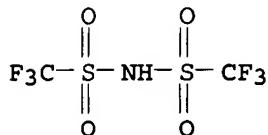
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

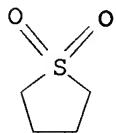


RN 90076-65-6 HCPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)

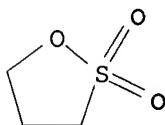


● Li

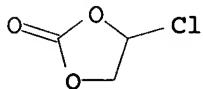
IT 126-33-0, Sulfolane 1120-71-4, Propanesultone  
 3967-54-2, Chloroethylene carbonate  
 (nonaq. electrolyte lithium secondary battery)  
 RN 126-33-0 HCPLUS  
 CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 1120-71-4 HCPLUS  
 CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 3967-54-2 HCPLUS  
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq electrolyte lithium secondary battery  
 IT Carboxylic acids, uses

(C2-20, fluoroalkyl; nonaq. **electrolyte** lithium secondary battery)

IT Sulfonic acids, uses  
(alkanesulfonic, sodium salts, fluoro-; nonaq. **electrolyte** lithium secondary battery)

IT Anhydrides  
Ethers, uses  
(cyclic; nonaq. **electrolyte** lithium secondary battery)

IT Carboxylic acids, uses  
(esters, cyclic; nonaq. **electrolyte** lithium secondary battery)

IT Secondary batteries  
(lithium; nonaq. **electrolyte** lithium secondary battery)

IT Battery electrodes  
Battery **electrolytes**  
Surface free energy  
Surface tension  
Surfactants  
(nonaq. **electrolyte** lithium secondary battery)

IT Carbonaceous materials (technological products)  
(nonaq. **electrolyte** lithium secondary battery)

IT Cyclic compounds  
(nonaq. **electrolyte** lithium secondary battery)

IT Lactones  
(nonaq. **electrolyte** lithium secondary battery)

IT Fluoropolymers, uses  
(nonaq. **electrolyte** lithium secondary battery)

IT 463-79-6D, Carbonic acid, esters 1343-98-2D, Silicic acid, esters 7664-38-2D, Phosphoric acid, esters 7664-93-9D, Sulfuric acid, esters 7697-37-2D, Nitric acid, esters 7782-77-6D, Nitrous acid, esters 7782-99-2D, Sulfurous acid, esters 10043-35-3D, Boric acid, esters 13598-36-2D, Phosphorous acid, esters  
(cyclic; nonaq. **electrolyte** lithium secondary battery)

IT 79-20-9, Methyl acetate 85-44-9, Phthalic anhydride 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-54-4, Ethyl butyrate 105-58-8, Diethyl carbonate 108-29-2,  $\gamma$ -Valerolactone 108-30-5, Succinic anhydride, uses 108-32-7, Propylene carbonate 109-60-4, n-Propyl acetate 123-86-4, Butyl acetate 140-11-4, Benzyl acetate 141-78-6, Ethyl acetate, uses 517-23-7,  $\alpha$ -Acetyl- $\gamma$ -butyrolactone 540-42-1, Isobutyl propionate 554-12-1, Methyl propionate 616-02-4, Citraconic anhydride 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate 1679-47-6,  $\alpha$ -Methyl- $\gamma$ -butyrolactone 2170-03-8, Itaconic anhydride 2453-03-4, 1,3-Dioxan-2-one 7782-42-5, Graphite, uses 9002-88-4, Polyethylene 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 52627-24-4, Cobalt lithium oxide 52876-41-2, Trimethylene borate 90076-65-6 132843-44-8 201416-30-0, 4,5-Diphenyl-1,3,2-dioxathiole-2,2-dioxide 389604-01-7  
(nonaq. **electrolyte** lithium secondary battery)

IT 77-79-2, Sulfolene 102-09-0, Diphenyl carbonate 126-33-0, Sulfolane 463-79-6D, Carbonic acid, ester 822-38-8, Ethylene trithiocarbonate 872-36-6, Vinylene carbonate 872-93-5, 3-MethylSulfolane 930-35-8, Vinylene trithiocarbonate 1120-71-4, Propanesultone 1600-44-8 1633-83-6,

1,4-Butanesultone 2171-74-6, 1,3-Benzodioxol-2-one 2965-52-8  
 3741-38-6, Ethylene sulfite 3967-54-2, Chloroethylene  
 carbonate 4236-15-1 4427-92-3, Phenylethylene carbonate  
 4427-96-7, Vinylethylene carbonate 6255-58-9 7440-44-0,  
 Carbon, uses 7704-34-9D, Sulfur, ester 16761-08-3 21240-34-6  
 37228-47-0, Ethylene phosphite 40630-61-3 52550-45-5  
 75032-95-0, Disodium N-perfluorooctanesulfonylglutamate  
 75046-16-1 122036-85-5 324547-56-0 366787-88-4  
 (nonaq. electrolyte lithium secondary battery)

IT 24937-79-9, Pvdf

(nonaq. electrolyte lithium secondary battery)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 17 OF 25 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:796408 HCPLUS

DOCUMENT NUMBER: 135:346868

TITLE: Gel electrolyte battery

INVENTOR(S): Shibuya, Mashio; Suzuki, Yusuke

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 19 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1150374	A1	20011031	EP 2001-110350	2001 0426

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,  
 MC, PT, IE, SI, LT, LV, FI, RO

JP 2001313075	A2	20011109	JP 2000-132925	2000 0427
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US 2001053485	A1	20011220	US 2001-844004	2001 0427
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CN 1333579	A	20020130	CN 2001-122097	2001 0427
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PRIORITY APPLN. INFO.: JP 2000-132925 A  
 2000  
0427

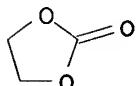
AB In a gel electrolyte, the nonaq. electrolytic  
 solution having a lithium-containing electrolyte salt dissolved  
 in a nonaq. solvent is gelled by a matrix polymer. The gel  
 electrolyte includes a halogen substituted ethylene  
 carbonate obtained by replacing one or more hydrogen atoms of  
 ethylene carbonate by halogens. Since the halogen substituted  
 ethylene carbonate (for instance, fluorinated ethylene carbonate)  
 is extremely low in its reactivity with a neg. electrode, a loss  
 capacity is small so that it is very effective for obtaining a  
 high capacity. Further, the halogen substituted ethylene  
 carbonate has a m.p. lower than that of ethylene carbonate, it can

realize a large capacity with less deterioration of a low temperature performance than that of ethylene carbonate. Accordingly, a strength, a liquid retaining characteristic, a stability relative to the neg. electrode, a battery capacity, a cyclic characteristic, a load characteristic and a low temperature characteristic can be improved.

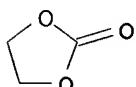
IT 96-49-1, Ethylene carbonate 96-49-1D, Ethylene carbonate, fluorinated 623-96-1, Dipropyl carbonate 90076-65-6 183301-46-4  
(gel electrolyte battery)

RN 96-49-1 HCAPLUS

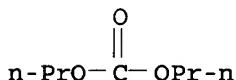
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



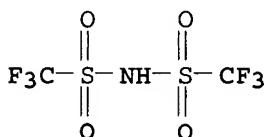
RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 623-96-1 HCAPLUS  
CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

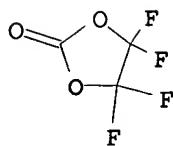


RN 90076-65-6 HCAPLUS  
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 183301-46-4 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4,4,5,5-tetrafluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38  
 ST battery gel **electrolyte**; fluorinated ethylene carbonate  
 gel **electrolyte** battery  
 IT Battery **electrolytes**  
 Secondary batteries  
 (gel **electrolyte** battery)  
 IT Carbonaceous materials (technological products)  
 Fluoropolymers, uses  
 Polyoxyalkylenes, uses  
 (gel **electrolyte** battery)  
 IT Transition metal oxides  
 (lithiated; gel **electrolyte** battery)  
 IT Lithium alloy, base  
 (gel **electrolyte** battery)  
 IT 96-49-1, Ethylene carbonate 96-49-1D, Ethylene  
 carbonate, fluorinated 105-58-8, Diethyl carbonate 108-32-7,  
 Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0,  
 Ethyl methyl carbonate 623-96-1, Dipropyl carbonate  
 7439-93-2, Lithium, uses 9011-17-0, Hexafluoropropylene-  
 vinylidene fluoride copolymer 12190-79-3, Cobalt lithium oxide  
 colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3,  
 Lithium hexafluorophosphate 24937-79-9, Pvdf 25014-41-9,  
 Polyacrylonitrile 25067-61-2, Polymethacrylonitrile  
 25322-68-3, Peo 25322-69-4, Polypropylene oxide 30714-78-4,  
 Ethyl butyl carbonate 35363-40-7, Ethyl propyl carbonate  
 56525-42-9, Methyl propyl carbonate 90076-65-6  
 132404-42-3 132843-44-8 183301-46-4 210406-60-3  
 (gel **electrolyte** battery)  
 IT 7782-42-5, Graphite, uses  
 (gel **electrolyte** battery)  
 IT 7429-90-5, Aluminum, uses  
 (gel **electrolyte** battery)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 18 OF 25 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2001:759631 HCPLUS  
 DOCUMENT NUMBER: 135:306245  
 TITLE: Nonaqueous **electrolyte** secondary  
 battery  
 INVENTOR(S): Hatazaki, Makino; Iwamoto, Kazuya; Sonoda,  
 Kumiko; Yoshizawa, Hiroshi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd.,  
 Japan  
 SOURCE: Eur. Pat. Appl., 13 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1

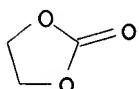
## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1146586	A2	20011017	EP 2001-303366	2001 0410
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001297790	A2	20011026	JP 2000-109268	2000 0411
US 2001038949	A1	20011108	US 2001-828941	2001 0410
CN 1317845	A	20011017	CN 2001-116833	2001 0411
PRIORITY APPLN. INFO.:			JP 2000-109268	A 2000 0411

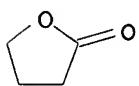
OTHER SOURCE(S): MARPAT 135:306245

AB A nonaq. electrolyte secondary battery having excellent charge/discharge characteristics and a long cycle life, and generating a smaller amount of gas during storage than conventional batteries, comprises a pos. electrode; a neg. electrode; and a nonaq. electrolyte comprising a nonaq. solvent and a solute dissolved therein. This improvement is achieved by adding to the nonaq. electrolyte a surface active agent represented by the general formula : X-CnF2n-Y-(CH<sub>2</sub>-CH<sub>2</sub>)<sub>m</sub>-Z; where X is H or F, Y is -CONH- or -SO<sub>2</sub>NR- in which R is an alkyl group, Z is -OH, -CH<sub>3</sub>, -PO<sub>3</sub>W<sub>2</sub> or -SO<sub>3</sub>W in which W is an alkali metal, 4 ≤ n ≤ 10, and 20 ≤ m ≤ 100.

IT 96-49-1, Ethylene carbonate  
(nonaq. electrolyte secondary battery)  
RN 96-49-1 HCPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

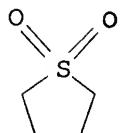


IT 96-48-0, γ-Butyrolactone 126-33-0,  
Sulfolane 1120-71-4, Propanesultone 3967-54-2,  
Chloroethylene carbonate  
(nonaq. electrolyte secondary battery)  
RN 96-48-0 HCPLUS  
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



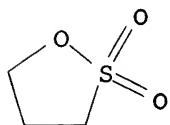
RN 126-33-0 HCPLUS

CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



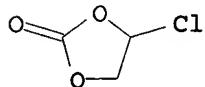
RN 1120-71-4 HCPLUS

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 3967-54-2 HCPLUS

CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery nonaq **electrolyte** secondary; surfactant additive

battery nonaq **electrolyte** secondary

IT Oxides (inorganic), uses

(lithiated; nonaq. **electrolyte** secondary battery)

IT Battery **electrolytes**

Secondary batteries

Surfactants

(nonaq. **electrolyte** secondary battery)

IT Carbonaceous materials (technological products)

(nonaq. **electrolyte** secondary battery)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene

carbonate 623-53-0, Ethyl methyl carbonate

(nonaq. **electrolyte** secondary battery)

IT 77-79-2, Sulfolene 96-48-0,  $\gamma$ -Butyrolactone

102-09-0, Diphenyl carbonate 105-58-8, Diethyl carbonate

126-33-0, Sulfolane 274-17-9, 1,3,2-Benzodioxathiole

420-12-2, Ethylene sulfide 616-38-6, Dimethyl carbonate

822-38-8, Ethylene trithiocarbonate 872-36-6, Vinylene carbonate

872-93-5, 3-Methylsulfolane 930-35-8, 1,3-Dithiole-2-thione

1120-71-4, Propanesultone 1633-83-6, 1,4-Butanesultone

2171-74-6, 1,3-Benzodioxol-2-one 3967-54-2,

Chloroethylene carbonate 4427-92-3, Phenylethylene carbonate

4427-96-7, Vinylethylene carbonate 16761-08-3 21240-34-6

39700-44-2 122036-85-5 324547-56-0 366784-73-8 366787-88-4

(nonaq. **electrolyte** secondary battery)

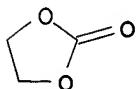
L41 ANSWER 19 OF 25 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:208040 HCPLUS

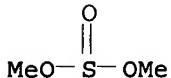
DOCUMENT NUMBER: 134:225075  
 TITLE: Nonaqueous and polymer electrolytes  
       for lithium battery and electrochemical  
       capacitor  
 INVENTOR(S): Arai, Juichi; Katayama, Hideaki; Kobayashi,  
       Mitsuru  
 PATENT ASSIGNEE(S): Hitachi, Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 33 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1085591	A1	20010321	EP 2000-118434	2000 0824
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001085058	A2	20010330	JP 1999-265002	1999 0920
US 6495293	B1	20021217	US 2000-645428	2000 0824
TW 472412	B	20020111	TW 2000-89117443	2000 0829
PRIORITY APPLN. INFO.:			JP 1999-265002	A 1999 0920

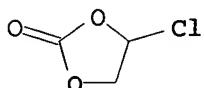
OTHER SOURCE(S): MARPAT 134:225075  
 AB The object of the present invention is to provide organic  
       electrolyte and polymer electrolyte, wherein  
       diffusivity of mobile ions is enhanced; and to provide lithium  
       primary battery, lithium secondary battery, polymer secondary  
       battery, and electrochem. capacitor, wherein their capacities at a  
       low temperature are increased. The present invention relates to nonaq.  
       electrolyte and polymer electrolyte, wherein  
       fluorinated solvent having fluorinated alkyl group, whose terminal  
       end structure is unsym. structure, is mixed with the  
       electrolyte, and to various usage using the above  
       electrolyte.  
 IT 96-49-1, Ethylene carbonate 616-42-2, Dimethyl  
       sulfite 3967-54-2, Chloroethylene carbonate  
       33454-82-9, Lithium triflate  
       (nonaq. and polymer electrolytes for lithium battery  
       and electrochem. capacitor)  
 RN 96-49-1 HCPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



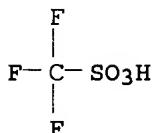
RN 616-42-2 HCAPLUS  
 CN Sulfurous acid, dimethyl ester (8CI, 9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40  
 ICS H01G009-02  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38, 76  
 ST lithium battery nonaq polymer electrolyte; electrochem  
 capacitor nonaq polymer electrolyte  
 IT Ethers, uses  
 (fluoroalkyl; nonaq. and polymer electrolytes for  
 lithium battery and electrochem. capacitor)  
 IT Primary batteries  
 Secondary batteries  
 (lithium; nonaq. and polymer electrolytes for lithium  
 battery and electrochem. capacitor)  
 IT Battery electrolytes  
 Electrolytic capacitors  
 Polymer electrolytes  
 Secondary batteries  
 (nonaq. and polymer electrolytes for lithium battery  
 and electrochem. capacitor)  
 IT Fluoropolymers, uses  
 (nonaq. and polymer electrolytes for lithium battery  
 and electrochem. capacitor)  
 IT 96-49-1, Ethylene carbonate 382-34-3,  
 1,1,2,3,3,3-Hexafluoropropyl methyl ether 425-88-7 429-06-1,  
 Tetraethylammonium tetrafluoroborate 616-38-6, Dimethyl

carbonate 616-42-2, Dimethyl sulfite 678-74-0  
 872-36-6, Vinylene carbonate 1313-13-9, Manganese dioxide, uses  
 2795-50-8 3021-63-4 3741-38-6, Ethylene sulfite  
 3967-54-2, Chloroethylene carbonate 7782-42-5, Graphite,  
 uses 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf  
 33454-82-9, Lithium triflate 37830-90-3,  
 Dimethylvinylene carbonate 132843-44-8 163702-07-6  
 163702-08-7  
 (nonaq. and polymer electrolytes for lithium battery  
 and electrochem. capacitor)

IT 7439-93-2, Lithium, uses  
 (nonaq. and polymer electrolytes for lithium battery  
 and electrochem. capacitor)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

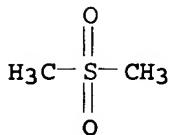
L41 ANSWER 20 OF 25 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2000:847085 HCPLUS  
 DOCUMENT NUMBER: 134:103155  
 TITLE: Origin of graphite exfoliation; an  
 investigation of the important role of solvent  
 cointercalation  
 AUTHOR(S): Chung, Geun-Chang; Kim, Hyung-Jin; Yu,  
 Seung-Il; Jun, Song-Hui; Choi, Jong-Wook; Kim,  
 Myung-Hwan  
 CORPORATE SOURCE: Korea Power Cell, Incorporated, Taejon,  
 305-380, S. Korea  
 SOURCE: Journal of the Electrochemical Society (2000),  
 147(12), 4391-4398  
 CODEN: JESOAN; ISSN: 0013-4651  
 PUBLISHER: Electrochemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB To elucidate the origin of graphite exfoliation, we have  
 investigated the influence of various material parameters relevant  
 to solvent co-intercalation, such as the cation, the  
 electrolytic solvents, and the structure of graphite, on  
 the solvent decomposition behavior. By electrochem. probing changes in  
 the electrode, we demonstrated that a large increase of surface  
 area accompanies the decomposition of propylene carbonate (PC).  
 Furthermore, such a change in surface area is dramatically  
 amplified when Li<sup>+</sup> is replaced by tetrabutylammonium ion. A  
 slight structural modification of PC exerts a profound influence  
 on the solvent decomposition behavior, as demonstrated with cis- and  
 trans-2,3-butylene carbonate. These reaction behaviors are also  
 altered significantly by the choice of graphite. Such an  
 influence of graphite structure is particularly surprising for  
 t-BC electrolyte, in which SFG44 graphite undergoes  
 extensive exfoliation, whereas SFG6 graphite and MCMB25 can be  
 cycled reversibly. These results can be best explained by  
 incorporating the co-intercalation of cyclic carbonate as a critical  
 process in the solid electrolyte interphase formation  
 mechanism.

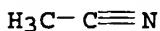
IT 67-71-0, Dimethyl sulfone 75-05-8, Acetonitrile,  
 uses 96-48-0,  $\gamma$ -Butyrolactone 3967-54-2,  
 Chloroethylene carbonate  
 (important role of solvent cointercalation in graphite  
 exfoliation)

RN 67-71-0 HCPLUS

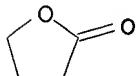
CN Methane, sulfonylbis- (9CI) (CA INDEX NAME)



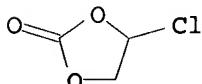
RN 75-05-8 HCAPLUS  
 CN Acetonitrile (8CI, 9CI) (CA INDEX NAME)



RN 96-48-0 HCAPLUS  
 CN 2 (3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 72

IT Battery anodes  
 Battery electrolytes  
 Exfoliation  
 Intercalation  
 (important role of solvent cointercalation in graphite  
 exfoliation)

IT 67-71-0, Dimethyl sulfone 75-05-8, Acetonitrile,  
 uses 96-48-0,  $\gamma$ -Butyrolactone 105-58-8,  
 Diethylcarbonate 108-32-7, 1,3-Dioxolan-2-one, 4-methyl-  
 274-09-9, 1,3-Benzodioxole 623-53-0, Ethyl methyl carbonate  
 872-36-6, Vinylene carbonate 3741-38-6, Glycol sulfite  
 3967-54-2, Chloroethylene carbonate 7782-42-5, Graphite,  
 uses 36368-39-5 51260-48-1  
 (important role of solvent cointercalation in graphite  
 exfoliation)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 21 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2000:504812 HCAPLUS  
 DOCUMENT NUMBER: 133:107332  
 TITLE: Dilatometric investigations of graphite

AUTHOR(S): Winter, Martin; Wrodnigg, Gerhard H.; Besenhard, Jürgen O.; Biberacher, Werner; Novak, Petr

CORPORATE SOURCE: Institute for Chemical Technology of Inorganic Materials, Graz University of Technology, Graz, AT-8010, Austria

SOURCE: Journal of the Electrochemical Society (2000), 147(7), 2427-2431

CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

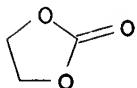
LANGUAGE: English

AB A relatively uncommon technique known as *in situ* electrochem. dilatometry can be used to record the macroscopic expansion (dilatation) and contraction of graphite samples during charge/discharge in Li<sup>+</sup> cation-containing nonaq. **electrolytes**. Several **electrolytes** based on solvent mixts. such as ethylene carbonate/dimethyl carbonate, pure propylene carbonate (PC), and PC with addnl. solvents (ethylene sulfite or chloroethylene carbonate) have been investigated. The dilatometer yields a clear distinction between solvated lithium intercalation/deintercalation occurring in pure PC (relative expansion of the order of >100%) and the corresponding unsolvated processes occurring in the other **electrolytes** (theor. relative expansion of the order of 10%). Exfoliation of graphite due to solvated lithium intercalation may destroy the graphite sample. The penetration of **electrolyte** into pores or fissures of the exfoliated sample can also be monitored by dilatometry. Hence, dilatometry provides relevant information concerning the feasibility of a given **electrolytic** solution for rechargeable lithium-ion cells with graphite as the neg. electrode. Limitations and advantages of the electrochem. dilatometer and specific exptl. features of the instrument are addressed.

IT 96-49-1, Ethylene carbonate 3967-54-2,  
Chloroethylene carbonate 90076-65-6  
(dilatometric investigations of graphite electrodes in nonaq. lithium battery **electrolytes**)

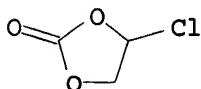
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS

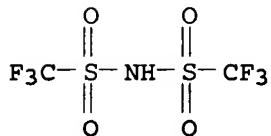
CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-

, lithium salt (9CI) (CA INDEX NAME)



● Li

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium battery nonaq **electrolyte** graphite electrode  
 dilatometry  
 IT Battery anodes  
 Battery **electrolytes**  
 Expansion  
 (dilatometric investigations of graphite electrodes in nonaq.  
 lithium battery **electrolytes**)  
 IT Secondary batteries  
 (lithium; dilatometric investigations of graphite electrodes in  
 nonaq. lithium battery **electrolytes**)  
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene  
 carbonate 616-38-6, Dimethyl carbonate 3741-38-6, Ethylene  
 sulfite 3967-54-2, Chloroethylene carbonate 7782-42-5,  
 Graphite, uses 90076-65-6  
 (dilatometric investigations of graphite electrodes in nonaq.  
 lithium battery **electrolytes**)  
 REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 22 OF 25 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2000:454463 HCPLUS  
 DOCUMENT NUMBER: 133:76708  
 TITLE: Secondary nonaqueous **electrolyte**  
 batteries using haloorganic compounds  
 INVENTOR(S): Suzuki, Hitoshi; Suzuki, Hirofumi; Deshamp,  
 Marc  
 PATENT ASSIGNEE(S): Mitsubishi Chemical Industries Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

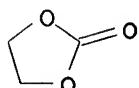
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2000188128	A2	20000704	JP 1998-366567	1998 1224
PRIORITY APPLN. INFO.:			JP 1998-366567	1998 1224

AB The batteries use Li-intercalatable anodes, cathodes, electrolyte solns. containing Li salts dissolved in nonaq. solvents containing haloorg. compds., and valve metals or their alloys at the parts to be in contact with the electrolyte solns. on cathode current collectors and the parts elec. connected to the collectors. The valve metals prevent oxidative decomposition of the haloorg. compds. and the batteries show good low-temperature characteristics, long-term stability, and long cycle life.

IT 96-49-1, Ethylene carbonate 3967-54-2,  
Chloroethylene carbonate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethylsulfonyl)amide  
(secondary Li batteries using valve metals and nonaq. electrolyte solns. containing haloorg. compds.)

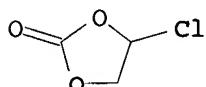
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



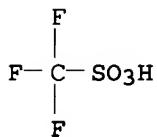
RN 3967-54-2 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



RN 33454-82-9 HCAPLUS

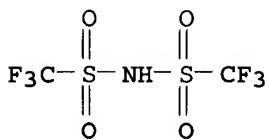
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)

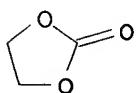


## ● Li

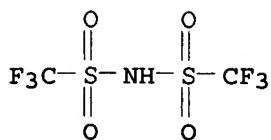
IC ICM H01M010-40  
ICS H01M010-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST lithium battery **electrolyte** solvent haloorg compd; valve  
metal nonaq **electrolyte** lithium battery  
IT Battery cathodes  
(Li-transition metal mixed oxides; secondary Li batteries using  
valve metals and nonaq. **electrolyte** solns. containing  
haloorg. compds.)  
IT Carboxylic acids, uses  
(esters, halogenated; secondary Li batteries using valve metals  
and nonaq. **electrolyte** solns. containing haloorg.  
compds.)  
IT Battery anodes  
(graphite; secondary Li batteries using valve metals and nonaq.  
**electrolyte** solns. containing haloorg. compds.)  
IT Carbonates, uses  
Ethers, uses  
(halogenated; secondary Li batteries using valve metals and  
nonaq. **electrolyte** solns. containing haloorg. compds.)  
IT Secondary batteries  
(lithium; secondary Li batteries using valve metals and nonaq.  
**electrolyte** solns. containing haloorg. compds.)  
IT Halides  
(organic; secondary Li batteries using valve metals and nonaq.  
**electrolyte** solns. containing haloorg. compds.)  
IT Battery **electrolytes**  
(secondary Li batteries using valve metals and nonaq.  
**electrolyte** solns. containing haloorg. compds.)  
IT Metals, uses  
(valve; secondary Li batteries using valve metals and nonaq.  
**electrolyte** solns. containing haloorg. compds.)  
IT Aluminum alloy  
(secondary Li batteries using valve metals and nonaq.  
**electrolyte** solns. containing haloorg. compds.)  
IT 7782-42-5, KS 44, uses  
(anode; secondary Li batteries using valve metals and nonaq.  
**electrolyte** solns. containing haloorg. compds.)  
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
108-32-7, Propylene carbonate 111-44-4, Bis(2-chloroethyl) ether  
515-84-4, Ethyl trichloroacetate 3967-54-2,  
Chloroethylene carbonate 7429-90-5, Aluminum, uses 7791-03-9,  
Lithium perchlorate 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium  
hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate  
33454-82-9, Lithium trifluoromethanesulfonate  
90076-65-6, Lithium bis(trifluoromethylsulfonyl)amide  
132404-42-3, Lithium tris(trifluoromethylsulfonyl)methanide

132843-44-8, Lithium bis(pentafluoroethanesulfonyl)amide  
 176719-70-3, Lithium trifluoromethanesulfonyl(nonafluorobutanesulfonyl)imide  
 (secondary Li batteries using valve metals and nonaq.  
 electrolyte solns. containing haloorg. compds.)

L41 ANSWER 23 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1999:465192 HCAPLUS  
 DOCUMENT NUMBER: 131:288762  
 TITLE: FTIR and DEMS investigations on the  
 electroreduction of chloroethylene  
 carbonate-based electrolyte  
 solutions for lithium-ion cells  
 AUTHOR(S): Winter, M.; Imhof, R.; Joho, F.; Nova, P.  
 CORPORATE SOURCE: Institute for Chemical Technology of Inorganic  
 Materials, Graz University of Technology,  
 Graz, A-8010, Austria  
 SOURCE: Journal of Power Sources (1999), 81-82,  
 818-823  
 CODEN: JPSODZ; ISSN: 0378-7753  
 PUBLISHER: Elsevier Science S.A.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Chloroethylene carbonate (C1EC) is decomposed to CO<sub>2</sub> at graphite  
 electrodes. We assume that the CO<sub>2</sub> participates in the formation  
 of an effective solid electrolyte interphase on the  
 electrode. Two in-situ techniques, subtractively normalized  
 interfacial Fourier transform IR spectroscopy and differential  
 electrochem. mass spectrometry, were applied in order to detect  
 CO<sub>2</sub> formation and possible secondary reactions. The applied anal.  
 methods provided conforming information about the onset of CO<sub>2</sub>  
 formation (2.2-2.1 V vs. Li/Li<sup>+</sup>).  
 IT 96-49-1, Ethylene carbonate 90076-65-6  
 (FTIR and differential electrochem. mass spectrometry  
 investigations on electroredn. of chloroethylene  
 carbonate-based electrolyte solns. for lithium-ion  
 cells)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
 , lithium salt (9CI) (CA INDEX NAME)

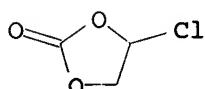


● Li

IT 3967-54-2, Chloroethylene carbonate  
(FTIR and differential electrochem. mass spectrometry  
investigations on electroredn. of chloroethylene  
carbonate-based **electrolyte** solns. for lithium-ion  
cells)

RN 3967-54-2 HCPLUS

CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72

ST lithium battery chloroethylene carbonate **electrolyte**  
electroredn

IT **Battery electrolytes**

Reduction, electrochemical  
(FTIR and differential electrochem. mass spectrometry  
investigations on electroredn. of chloroethylene  
carbonate-based **electrolyte** solns. for lithium-ion  
cells)

IT Secondary batteries

(lithium; FTIR and differential electrochem. mass spectrometry  
investigations on electroredn. of chloroethylene  
carbonate-based **electrolyte** solns. for lithium-ion  
cells)

IT 96-49-1, Ethylene carbonate 7782-42-5, Graphite, uses  
90076-65-6

(FTIR and differential electrochem. mass spectrometry  
investigations on electroredn. of chloroethylene  
carbonate-based **electrolyte** solns. for lithium-ion  
cells)

IT 3967-54-2, Chloroethylene carbonate

(FTIR and differential electrochem. mass spectrometry  
investigations on electroredn. of chloroethylene  
carbonate-based **electrolyte** solns. for lithium-ion  
cells)

IT 124-38-9, Carbon dioxide, formation (nonpreparative)  
(FTIR and differential electrochem. mass spectrometry  
investigations on electroredn. of chloroethylene  
carbonate-based **electrolyte** solns. for lithium-ion  
cells)

REFERENCE COUNT:

14

THERE ARE 14 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L41 ANSWER 24 OF 25 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1998:95386 HCPLUS  
 DOCUMENT NUMBER: 128:130228  
 TITLE: Chloroethylene carbonate, a solvent for lithium-ion cells, evolving CO<sub>2</sub> during reduction  
 AUTHOR(S): Winter, Martin; Novak, Petr  
 CORPORATE SOURCE: Electrochem. Section, Paul Scherrer Inst.,  
 Villegen, CH-5232, Switz.  
 SOURCE: Journal of the Electrochemical Society (1998),  
 145(2), L27-L30  
 CODEN: JESOAN; ISSN: 0013-4651

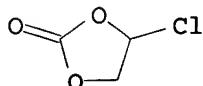
PUBLISHER: Electrochemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB We have investigated the role of chloroethylene carbonate (CIEC) on the formation of the solid-electrolyte interfacial film on graphite electrodes for rechargeable lithium-ion cells. In situ IR spectroelectrochem. expts. have been correlated with galvanostatic charge/discharge measurements. During the first reduction of graphite in a CIEC-based electrolyte, a sloping potential plateau from .apprx.1.7 to .apprx.1.4 V vs Li/Li<sup>+</sup> appears, which we relate to the generation of CO<sub>2</sub>. We assume that the CO<sub>2</sub> generated from CIEC is an intermediate reduction product that undergoes further reactions that contribute to the formation of the protective film.

IT 3967-54-2, Chloroethylene carbonate  
 (electrolyte additive; chloroethylene carbonate solvent for lithium-ion cells evolving CO<sub>2</sub> during reduction)

RN 3967-54-2 HCPLUS

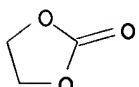
CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



IT 96-49-1, Ethylene carbonate  
 (electrolyte containing; chloroethylene carbonate solvent for lithium-ion cells evolving CO<sub>2</sub> during reduction)

RN 96-49-1 HCPLUS

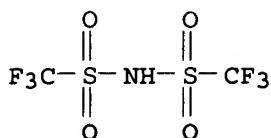
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



IT 90076-65-6  
 (electrolyte; chloroethylene carbonate solvent for lithium-ion cells evolving CO<sub>2</sub> during reduction)

RN 90076-65-6 HCPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 IT Electrode-electrolyte interface  
     (chloroethylene carbonate solvent for lithium-ion cells  
     evolving CO<sub>2</sub> during reduction)  
 IT 3967-54-2, Chloroethylene carbonate  
     (electrolyte additive; chloroethylene carbonate  
     solvent for lithium-ion cells evolving CO<sub>2</sub> during reduction)  
 IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate  
     (electrolyte containing; chloroethylene carbonate solvent  
     for lithium-ion cells evolving CO<sub>2</sub> during reduction)  
 IT 90076-65-6  
     (electrolyte; chloroethylene carbonate solvent for  
     lithium-ion cells evolving CO<sub>2</sub> during reduction)  
 REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE  
                   FOR THIS RECORD. ALL CITATIONS AVAILABLE  
                   IN THE RE FORMAT

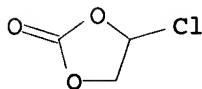
L41 ANSWER 25 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1997:101101 HCAPLUS  
 DOCUMENT NUMBER: 126:106587  
 TITLE: Nonaqueous **electrolyte** batteries  
       having reactive additives in  
       **electrolytes**  
 INVENTOR(S): Jinno, Maruo; Uehara, Mayumi; Sakurai,  
               Atsushi; Nishio, Koji; Saito, Toshihiko  
 PATENT ASSIGNEE(S): Sanyo Denki Kk, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 08321313	A2	19961203	JP 1995-150845	1995 0524
PRIORITY APPLN. INFO.:			JP 1995-150845	1995 0524

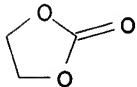
AB In the batteries having cathodes, anodes using Li as an active  
 mass, nonaq. **electrolytes** obtained by dissolving  
 LiCF<sub>3</sub>SO<sub>3</sub> or LiPF<sub>6</sub> in solvents of ethylene carbonate, propylene  
 carbonate, and/or butylene carbonate having high dielec. constant,  
 and separators, the **electrolytes** contain 1-20% additives

of tri-Me borate, tri-Et borate, di-Me Et boronate, Me Et borinate, Me<sub>3</sub>P, tri-Me phosphite, tri-Et phosphite, tri-Me phosphate, tri-Et phosphate, (MeO)<sub>4</sub>Ti, (EtO)<sub>4</sub>Ti, Al methoxide, Al ethoxide, CCl<sub>4</sub>, 1,2-dichloroethane, fluorobenzene, chloromethyl Et ether, 1,2-dichloroethyl Et ether,  $\beta$ -methoxyethoxymethyl chloride, 1,2-bis(2-chloroethoxy)ethane, 3-bromofuran, cetyltrimethylammonium chloride, 4-chloro-1,3-dioxolan-2-one, Mg(NO<sub>3</sub>)<sub>2</sub>, Fe(NO<sub>3</sub>)<sub>3</sub>, FeI<sub>3</sub>, Zn(NO<sub>3</sub>)<sub>2</sub>, ZnCO<sub>3</sub>, In(NO<sub>3</sub>)<sub>3</sub>, Ga(NO<sub>3</sub>)<sub>3</sub>, and/or HF. The **electrolytes** may contain 1,2-dimethoxyethane. Since the additives react with Li in anodes and the solvents and the solutes in the **electrolytes** to form coatings on the anodes for prevention of the reaction between the **electrolytes** and the anodes, the batteries have improved storage property.

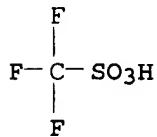
IT 3967-54-2, 4-Chloro-1,3-dioxolan-2-one  
 (electrolyte additive; nonaq. batteries having reactive additives in **electrolytes** for storage)  
 RN 3967-54-2 HCPLUS  
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



IT 96-49-1, Ethylene carbonate  
 (electrolyte solvent; nonaq. batteries having reactive additives in **electrolytes** for storage)  
 RN 96-49-1 HCPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



IT 33454-82-9, Lithium trifluoromethanesulfonate  
 (electrolyte; nonaq. batteries having reactive additives in **electrolytes** for storage)  
 RN 33454-82-9 HCPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-16  
 ICS H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nonaq battery **electrolyte** reactive additive storage;  
lithium anode nonaq battery **electrolyte** additive

IT **Battery electrolytes**  
(nonaq. batteries having reactive additives in  
**electrolytes** for storage)

IT 7439-93-2, Lithium, uses  
(anode active mass; nonaq. batteries having reactive additives  
in **electrolytes** for storage)

IT 56-23-5, Carbon tetrachloride, uses 78-40-0, Triethyl phosphate  
107-06-2, 1,2-Dichloroethane, uses 112-02-7,  
Cetyltrimethylammonium chloride 112-26-5, 1,2-Bis(2-  
chloroethoxy)ethane 121-43-7, Trimethyl borate 121-45-9,  
Trimethyl phosphite 122-52-1, Triethyl phosphite 150-46-9,  
Triethyl borate 462-06-6, Fluorobenzene 512-56-1, Trimethyl  
phosphate 555-75-9, Aluminum ethoxide 594-09-2,  
Trimethylphosphine 623-46-1, 1,2-Dichloroethyl ethyl ether  
865-31-6, Aluminum methoxide 992-92-7, Tetramethylorthotitanate  
3087-36-3, Tetraethylorthotitanate 3188-13-4, Chloromethyl ethyl  
ether 3486-35-9, Zinc carbonate 3967-54-2,  
4-Chloro-1,3-dioxolan-2-one 3970-21-6,  $\beta$ -  
Methoxyethoxymethyl chloride 7318-82-3, Dimethyl ethyl boronate  
7397-46-8, Methyl diethyl borinate 7664-39-3, Hydrofluoric acid,  
uses 7779-88-6, Zinc nitrate 10377-60-3, Magnesium nitrate  
10421-48-4, Iron(III) nitrate 13494-90-1, Gallium nitrate  
13770-61-1, Indium nitrate 15600-49-4, Iron iodide (FeI3)  
22037-28-1, 3-Bromofuran  
(**electrolyte** additive; nonaq. batteries having  
reactive additives in **electrolytes** for storage)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene  
carbonate 110-71-4, 1,2-Dimethoxyethane 4437-85-8, Butylene  
carbonate  
(**electrolyte** solvent; nonaq. batteries having  
reactive additives in **electrolytes** for storage)

IT 21324-40-3, Lithium hexafluorophosphate 33454-82-9,  
Lithium trifluoromethanesulfonate  
(**electrolyte**; nonaq. batteries having reactive  
additives in **electrolytes** for storage)